THE PRACTICAL INFANT TEACHER

VOLUME III

EDITED BY

P. B. BALLARD

M.A., D.LIT. LONDON

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THE PRACTICAL INFANT TEACHER

VOLUME III

THE PRACTICAL INFANT TEACHER

A GUIDE TO THE MOST MODERN METHODS OF TEACHING
AND THE HAPPY OCCUPATIONS OF CHILDREN IN NURSERY
AND INFANT SCHOOLS

CONTRIBUTED BY LEADING AUTHORITIES IN EVERY BRANCH OF INFANT EDUCATION
WITH NUMEROUS ILLUSTRATED SCHEMES OF WORK AND PRACTICAL SUGGESTIONS

Edited by P. B. BALLARD, M.A., D.Lit. (Lond.)

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(*Illustrated by Helen Kapp*)

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LEGENDS

(continued)

THE LEGEND OF ST. GEORGE

(To be told on St. George's Day, 23rd April)

LONG, long ago, in a country far away across the seas, there was a beautiful city over which the sun seemed always to be shining. The air was sweet with the scent of the flowers that grew in the lovely gardens. The birds sang merrily, and their songs were echoed by the happy voices of the men, women and children as they passed to and fro in the streets.

The king who ruled over this city was good and wise and beloved by all his people. Still more beloved by everyone was the king's only daughter, not only because she was beautiful to look upon, but because of her sweetness and gentleness that made her so ready to help all who were in sorrow or want.

The Gloomy Marsh

Not far from the foot of the hill on which the city stood was a stretch of gloomy, marshy land at one end of which was a lake, to which the shepherds took their flocks for water.

One day, as a shepherd was taking his sheep to the lake, the sky seemed to grow dark and the air chill and dreary. When he came near the water, the man noticed that it was tossing and heaving. Then, suddenly, out of the waves came a fearful monster; it seized two of the sheep and disappeared.

Terrified by what had happened, the man ran to the city to warn the people. When they asked him to tell them what the monster was like, all he could say was that fire seemed to come out of its mouth, and that it had a great lashing tail that had beaten the waves into foam.

From that day happiness fled from the city. The next day the monster again appeared making its way towards the city. It neither walked nor flew, but travelled over the marsh with a swift crawling movement.

Out from the city gates rode the king's

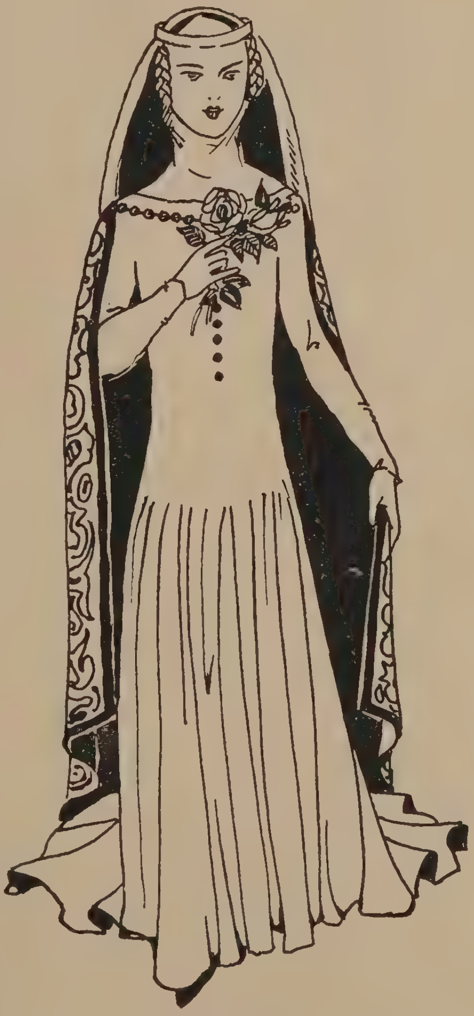


FIG. 125
The King's Only Daughter

soldiers to kill it, but as soon as they met the fiery breath of the dragon, they could use none of their weapons. Helpless they returned to the city, and to keep away the monster the townsfolk drove two sheep down the hill.

The Dragon Eats All the Sheep

Day after day at noon the dragon appeared, and although many ways of killing it were attempted, not one was successful. Day by day, two sheep were driven down the hill to feed the dragon, until at last all the sheep had been eaten. Then a bullock was sent down the hill each day for the dragon's meal, until he had devoured every one.

Then, in despair the king called his people together and said, "Good people, since our soldiers have been unable to kill the dragon, we must give it food, otherwise it will come to this city and destroy everything with its fiery breath. How shall we find food now that the cattle and sheep are all eaten ?"

For a long while they talked together, and at last in their misery and fear they decided that every day at sunrise they should cast lots and he on whom the lot fell must go down the hill at noon to the dragon so that the others might live in safety.

At this decision the whole city was plunged in gloom. The birds ceased their song ; no one laughed or sang ; tears were in the people's eyes and sorrow in their hearts. Each day some one went out of the city gates alone ; it might be a father, a mother, a son, or daughter. And so the days went by until one day at sunrise the lot fell on the sweet and beautiful princess.

The Lot Falls on the Princess

Then the king cried, "Spare my daughter, spare my only child. Take from me all my wealth and jewels, but leave me the one who is my greatest treasure."

Weeping the people answered their king, "Sire, we would spare your daughter if we could, for we also love her, but the law that we made was for everyone, and as we have suffered in losing those we loved, so you also must suffer now."

Then the princess ran to her father, and throwing her arms round him said, "Father, do not weep for me, I am not afraid. I will gladly do my part to help to save the people."

When noontime came, the princess in her royal robes walked to the city gates and there said good-bye to the weeping townsfolk, and her dear father. Then she passed through the open gates, and as they clanged behind her, she stepped bravely down the hill to meet the dragon.

St. George Rides to the City

Now it chanced on that day that St. George, a most fearless and noble knight, came riding towards the city.

In amazement he saw the princess alone and weeping, and walking towards the marshy land where the grass was all shrivelled, and the trees leafless and bare.

"Why do you weep here alone, fair maiden ?" he asked.

Because of the tears in her eyes the princess had not seen him coming, but now she turned to look at him. She saw his great white horse, his sword at his side, his spear with a pennon of white and red, his shiny armour and his eyes full of pity. Quickly she told him all the sad story of the terrible dragon, and "Oh, Sir, I pray you ride away at once," said she, "for look, here comes the monster."

"I will not leave you in such a cowardly manner," answered St. George. "By the help of God, I will fight the monster and save you from death. Pray for me that God may give my heart courage, and my arms strength."

Stooping down, he lifted the princess on to his horse, and rode with her to a great rock where she would be safe. Then, turning his horse towards the lake he went to meet the dragon.

Never before had St. George seen such a terrible beast ! Its body was covered with hard scales ; flames came from its wide open mouth ; its feet had fierce claws that were raised to strike at St. George. With a prayer to God for help, St. George charged, with his spear levelled to strike ; but the blow only glanced off that scaly back.

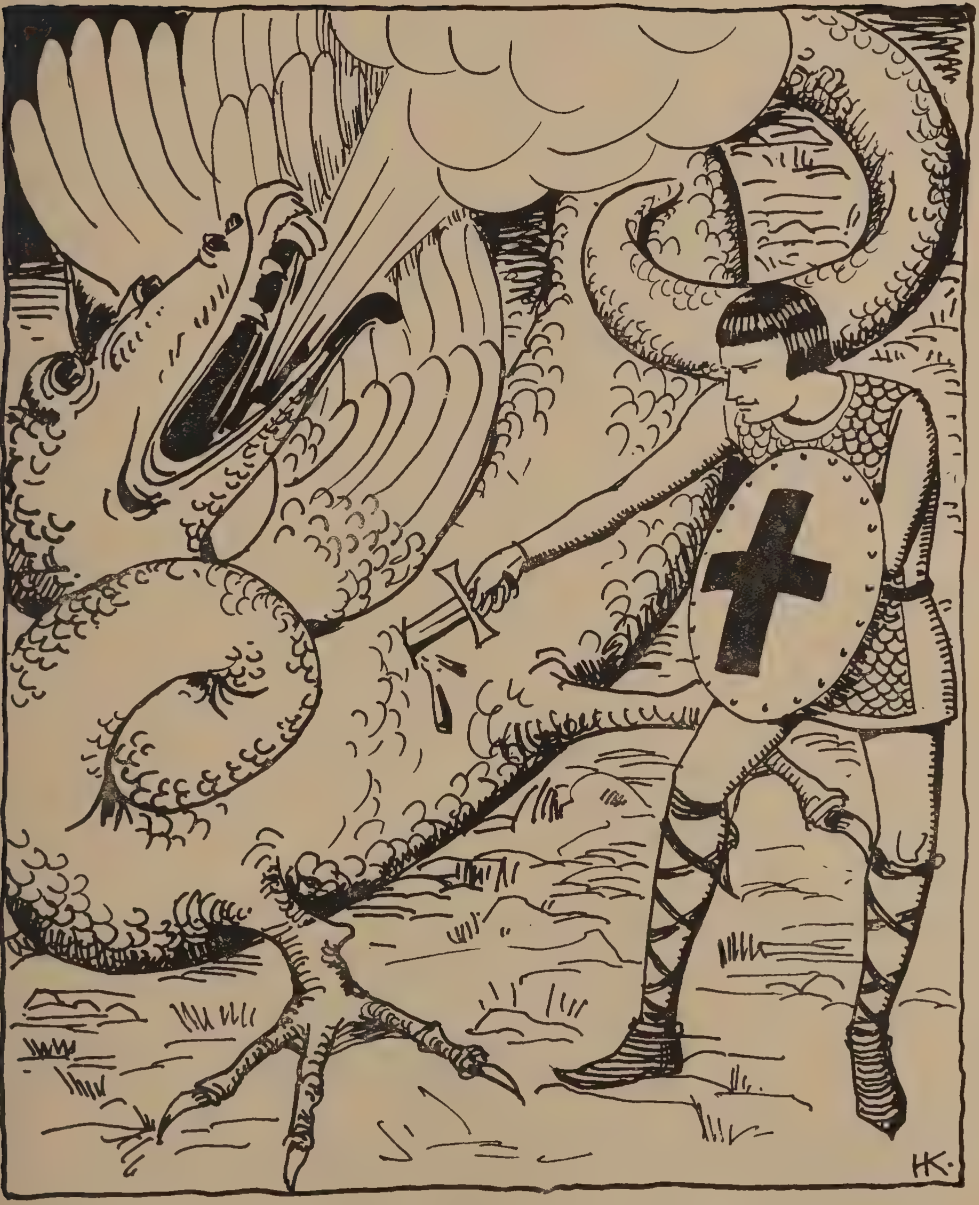


FIG. 126

St. George and the Dragon

The Dragon is Killed

Again and again the charge was made, until at last, as his spear struck under the dragon's left wing, St. George and his horse were thrown to the ground. Quickly they sprang to their feet, while the dragon bellowed with pain. From that moment the creature's strength

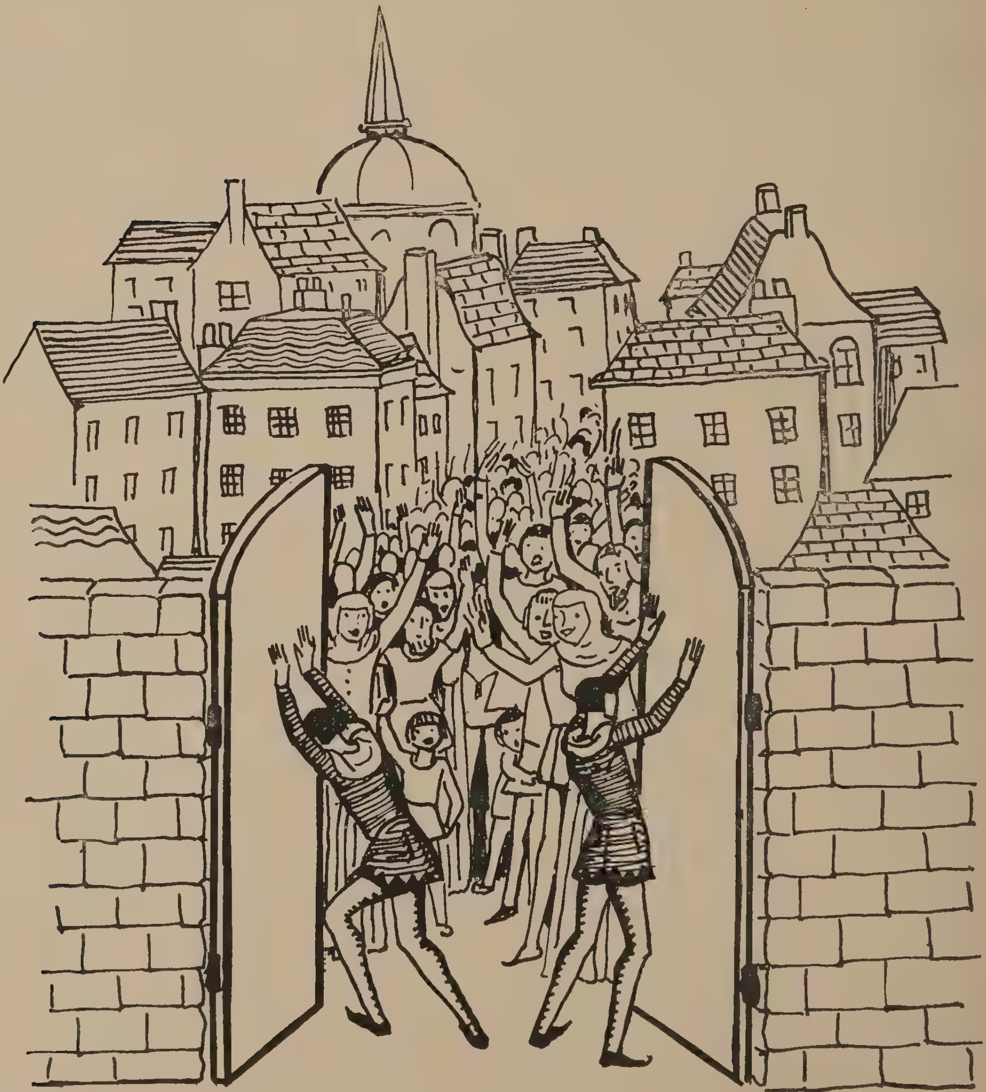


FIG. 127

They Flung Open the Gates

began to weaken, and after hours of fierce and deadly fighting St. George at last thrust his sword into the dragon's mouth, and so killed the horrible beast.

All this time the people in the town had been weeping for the princess, while the king had gone back alone to the palace with his bitter grief. Suddenly they heard a great shout, and looking from the city walls they saw what they thought was the dragon coming slowly, slowly towards the gate.

It *was* the dragon, but not alive as they imagined. St. George was dragging its lifeless body up the hill, while the princess walked safely by his side.

In their terror the people saw only the dragon ; now they were sure that nothing could save them. When St. George reached the gates, he found them barred and bolted. " Open to us, open, the dragon is dead," he shouted, as he thundered at the gates. For a long time no one dared venture to come forward, but at last, when they understood that the dragon was indeed dead, they flung open the gates and burst into wild shouts of joy.

Hearing the sounds of rejoicing the king came rushing from his palace to be met by the loving arms of his daughter.

All is Joy

Then in the market place St. George cut off the dead monster's head, and joy took the place of fear in the hearts of the people. Gladly they would have given St. George all they possessed for having freed them from the monster, but he refused every gift. " If you would give," said he, " let it be your love that you give to God. Offer Him the service of your lives ; be ready ever to defend the right, protect the weak, and show to all the world that the flower of chivalry is blossoming in your hearts."

So saying, St. George bade them farewell and, mounting his horse, he rode away, leaving behind him thankfulness where there had been misery, and joy in hearts that had been filled with sorrow.

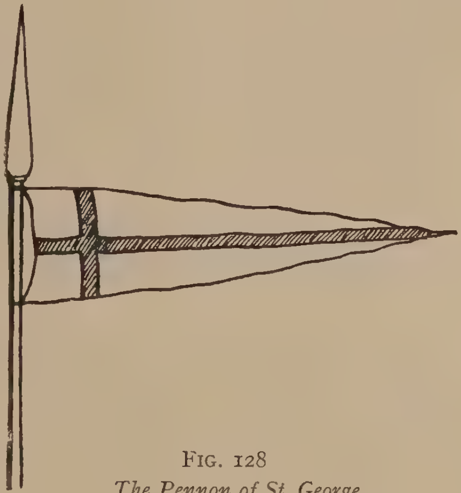


FIG. 128
The Pennon of St. George

Such was the brave, chivalrous knight that Englishmen have taken as their Patron Saint.

Language Training. Telling how the dragon was first seen. Describing the dragon. Describing St. George, etc. Practising new and hard words—chivalry—etc.

Handwork. Modelling the dragon—the hill and the city walls, the marsh below. Drawing and painting the pennon of St. George, Fig. 128.

THE STORY OF ST. ANDREW

(To be told on St. Andrew's Day, 30th November)

OVER the clear, blue waters of the sea of Galilee would dance the little fishing boat of Andrew, his brother Simon Peter, and their father Jonas. Their home was in the village of Bethsaida, that nestled by the sea-shore. Their lives were busy ones, full of hard work and toil, for they were fishermen, and fishermen must always work hard to earn a living.

Working with ropes and sails and nets made Andrew and Simon strong, courageous men. But fishermen have to be more than that; they must be quick in thinking what has to be done, and they must also learn to see quickly what is happening around them. Of the two brothers, Simon was often the one who was the first to do things, while Andrew usually seemed the one who saw most of what was happening around him.

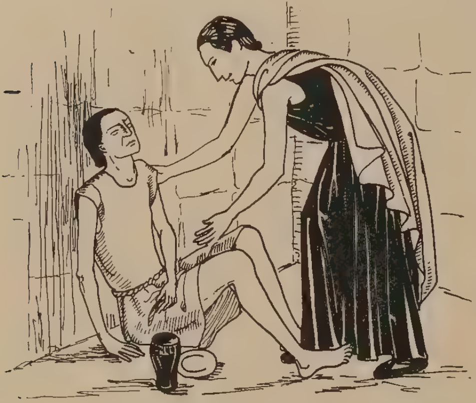


FIG. 129
Andrew finds Matthew in Prison

Andrew Meets Jesus

It is not surprising, therefore, to find that Andrew was one of a crowd that had stopped to hear a thrilling preacher, and as St. John spoke, he suddenly pointed to a stranger who was walking near. Andrew, like everyone else, turned to see who it was, and as he looked he knew in a wonderful way that he was looking at one who would always be his Best Friend. Off he ran at once to find his brother Simon Peter, exclaiming as he met him, "Come with me." He did not want his brother to lose one moment of the happiness of sharing in the joy that his new Friend, Jesus, had brought to him.

From that day Andrew and Simon Peter spent all the time they could with Jesus. Sometimes they had to stop in Bethsaida and continue their work as fishermen. Sometimes they were able to leave it, and travel from place to place with the one they had learnt to love so dearly.

But a day came when they knew they had seen their beloved Friend, Jesus, for the last time. Although parting from Him had been the greatest sorrow and unhappiness to them, they were determined that the love which had been kindled in their hearts should never die, and that they would spend their lives in telling others the message of love, peace and obedience that Jesus had given them.

Andrew Tells His Message

From place to place Andrew travelled, telling his wonderful message wherever he went. His journeyings brought him many adventures, and his life was often in danger, but he never drew back or was afraid.

There are many stories told of this brave Saint's life One of the most beautiful is that which relates how an angel appeared to him and bade him set out at once for a country across the sea, where another of the friends of Jesus had been cruelly treated. "I would gladly go if only I knew the way," said St Andrew. Then the angel told him to go to the sea; there he was to take the first ship that was sailing. St. Andrew did so; he found the ship and set sail in it. A good wind brought them quickly to land, and St. Andrew began at once to look for his friend, St. Matthew.

At last he found him in prison, where he had been thrown after having been beaten and badly hurt. The doors of the prison were left wide

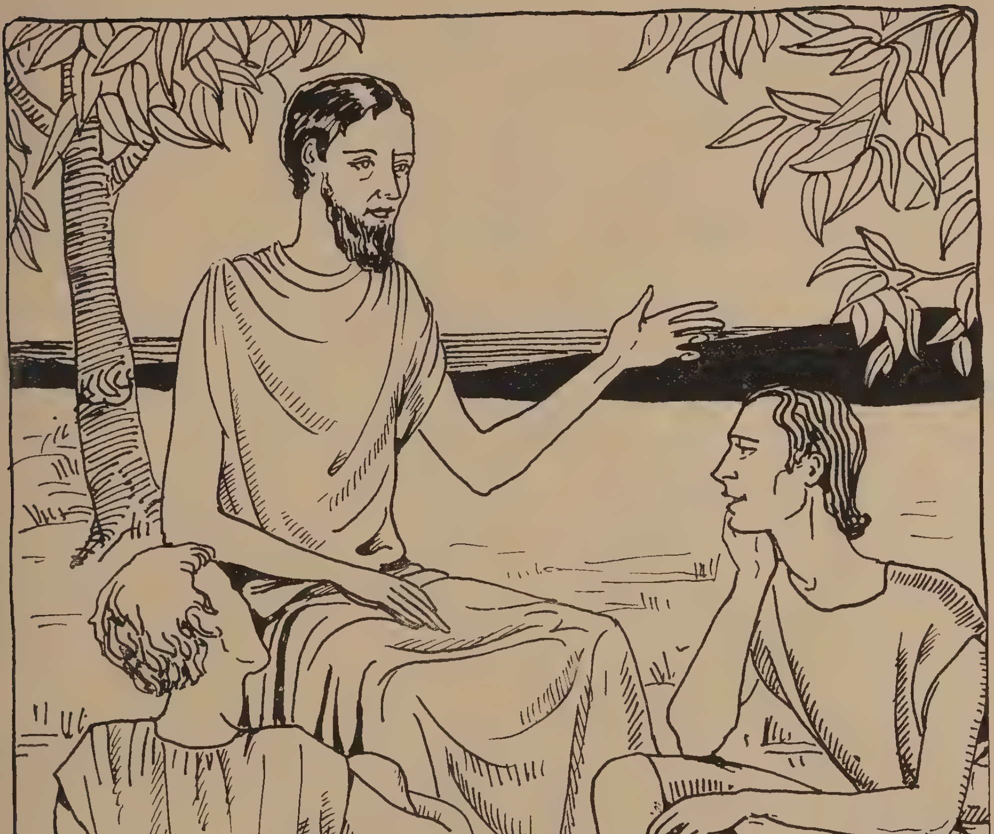


FIG. 130

Andrew and Simon Peter with Jesus

open, for St. Matthew's eyes had been hurt, and he was blind, therefore his gaolers were certain he could not escape. But St. Andrew healed his sight, and helped him to leave that country.

Next morning the gaolers found the prison cell empty, they caught St. Andrew, bound his hands so tightly that they bled, and dragged him into the street. In spite of all their cruelty, in spite of all they said and did to him, St. Andrew remained patient and quiet, telling his persecutors that God would take care of him. At last his tormentors, seeing that he feared nothing, began to realize that what he had said was true; so they let him go free, marvelling at his courage.

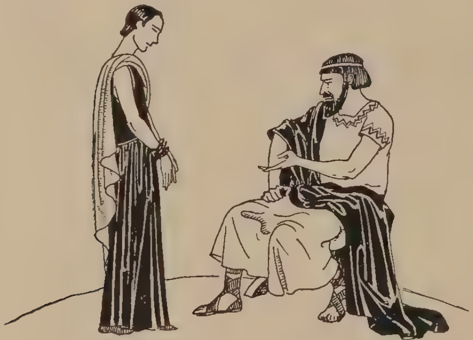


FIG. 131

Ægeas is Angry with St. Andrew

He Visits Greece

After many wanderings St. Andrew came to the country called Greece. There he found many people anxious to hear his wonderful message and to listen to his teaching. His work, however, greatly displeased Ægeas, the judge of one of the towns, and he came to St. Andrew and commanded him to leave the people alone. "They shall make their sacrifices to the ancient gods we have always worshipped in this country," said Ægeas, "and you shall do likewise." But St. Andrew most steadfastly refused to do so.

Then Ægeas gave a very cruel order; St. Andrew was to be beaten first by twenty-one men, then bound to a wooden cross so that his hands and feet were tied at the four ends. In this terrible manner St. Andrew died, bearing gladly all the pain and suffering for the sake of Jesus, his Friend.

The Vision of King Angus

Many years afterwards, when King Angus of Scotland was marching to battle, he saw a vision of St. Andrew holding up his cross as a reminder to the king that he should do something for the sake of Jesus. It seemed to the king as if the Saint whispered, "Give a tenth part of your kingdom."

On his return to his own country, Angus decided to rename one of his towns and call it St. Andrew, and he decided also that St. Andrew should be the Patron Saint of Scotland.

To-day you will still find the town of St. Andrews in Scotland; and 30th November is the day, each year, when the Patron Saint is specially remembered. Whenever we see a cross shaped thus, X, we call it "A St. Andrew's cross," for the legends tell us that was the shape of the one on which the Saint met his death so valiantly.

Language Training. Telling a story about St. Andrew. Telling how he became the Patron Saint of Scotland.

Handwork. Drawing and painting the cross of St. Andrew. (*See Section on Various Kinds of Social Functions*, p. 223.)

THE STORY OF ST. PATRICK

(*To be told on St. Patrick's Day, 17th March*)

MANY hundred years ago, there lived in a little farm near the seacoast in Scotland, a tall, strong, young lad called Patrick. With his father and mother he had lived in that lonely spot for sixteen years.

The only people he had met were the rough men who came sometimes in the evening to sit round the fire in the little farm, and to tell the story of all their adventures on land and sea. Patrick loved to listen to them just as much as he loved to spend his days out on the hillside making friends with the birds and wild animals. Sometimes he wished his mother would not keep him at home so often, to teach him the sweet songs, the psalms, she had learnt in her old home in a country far away from Scotland.

But Patrick loved his mother, so he listened when she told him how to be courteous, and as brave as a knight, and he tried to remember the words of the psalms she taught him.

On a Stormy Night

One stormy night, the kitchen of the little farm was filled with men sitting round the fire keeping each other company and talking of all their brave deeds. Patrick, with his parents, was there, also listening intently to the talk, and never heeding the roar of the wind and sea outside. Suddenly the farm door burst open, and in rushed a number of strong, cruel men who sprang on that company gathered round the fire.

Being taken so completely by surprise, they could do little to defend themselves. One or two managed to escape, some were killed, the others were taken prisoners, bound with ropes and carried off to the pirates' boats that they had left under the shelter of the rocky coast.

Among the captured was Patrick; there had been no chance of escape for him, and he did not know what had happened to his parents. Never had he dreamt he could feel as miserable as he did, when he lay bruised and bleeding in the bottom of the pirates' boat that pitched and tossed on the angry waves.

After some days the boat came to the land we call Ireland, and Patrick and the other prisoners were dragged on shore and sold as slaves.

Patrick is Made a Slave

Patrick's master owned many pigs, and he set his new slave to look after them. Summer and winter, scorched by the sun or frozen with the cold, Patrick had to look after the swine on the hillside. He was often hungry and tired, for he had to work long hours and was given very little to eat.

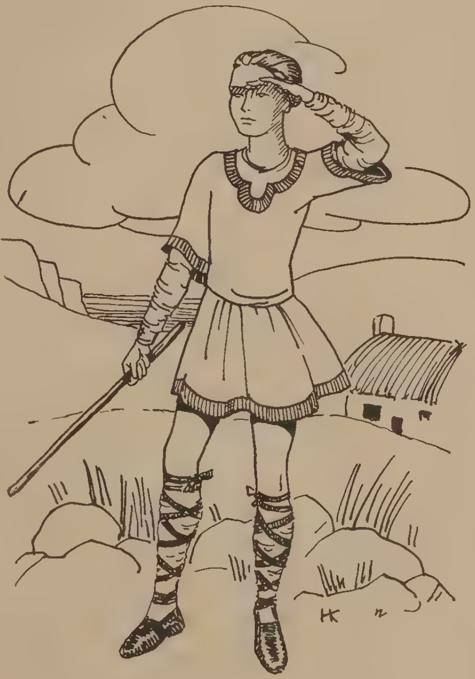


FIG. 132

A Tall, Strong, Young Lad called Patrick

When he was alone on the hillside he would think of his home, and the psalms his mother had taught him came back to his mind. So he

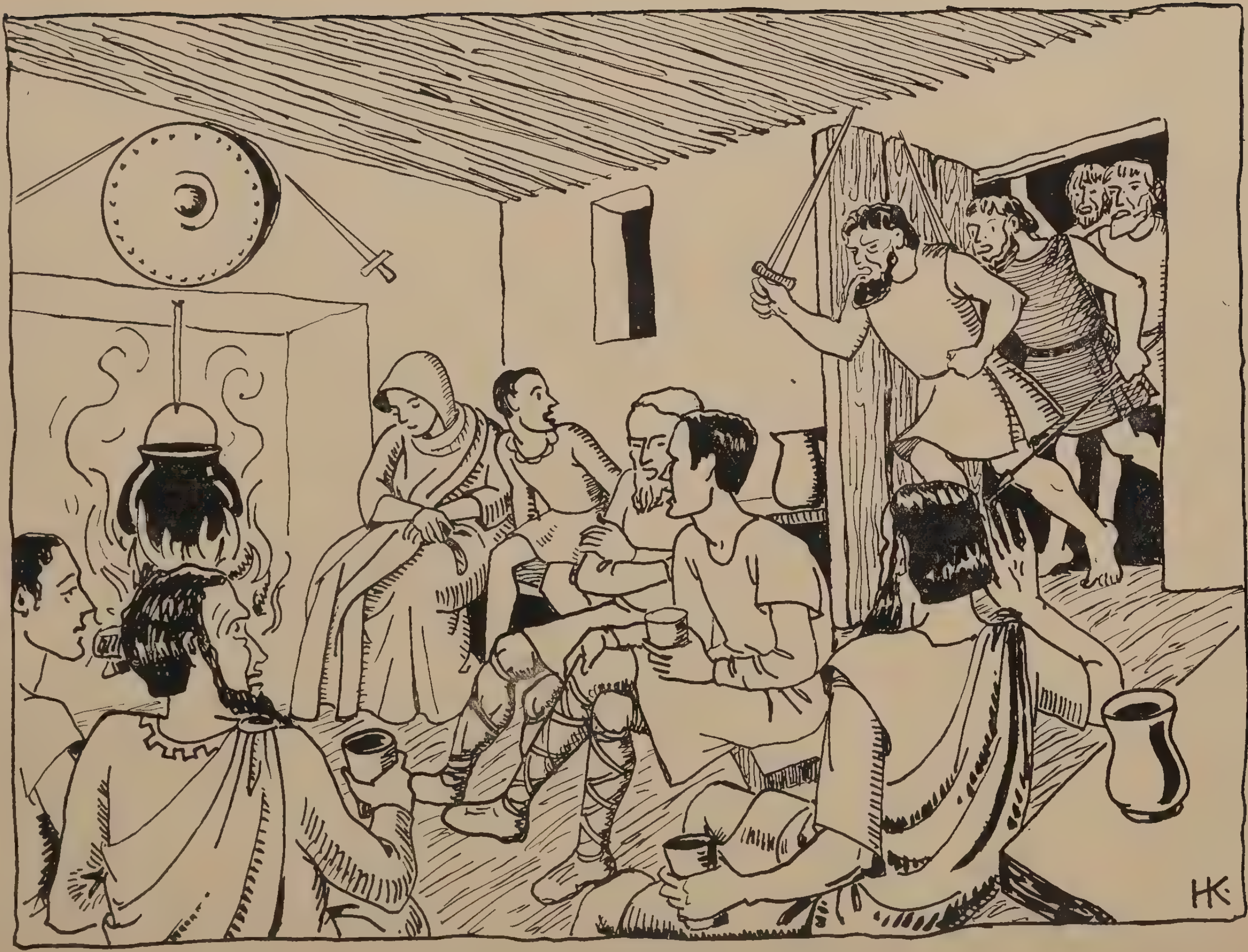


Fig. 133

Suddenly the Farm Door Burst Open

sang them with no one to listen to him, except the birds and animals.

He remembered also all that his mother had told him of the dear God who loves us and takes care of us, and Patrick said to himself, "If my master and the men in this land of Ireland knew about God, they would learn to be loving and kind instead of being harsh and cruel. How I wish I was a man and could teach them."

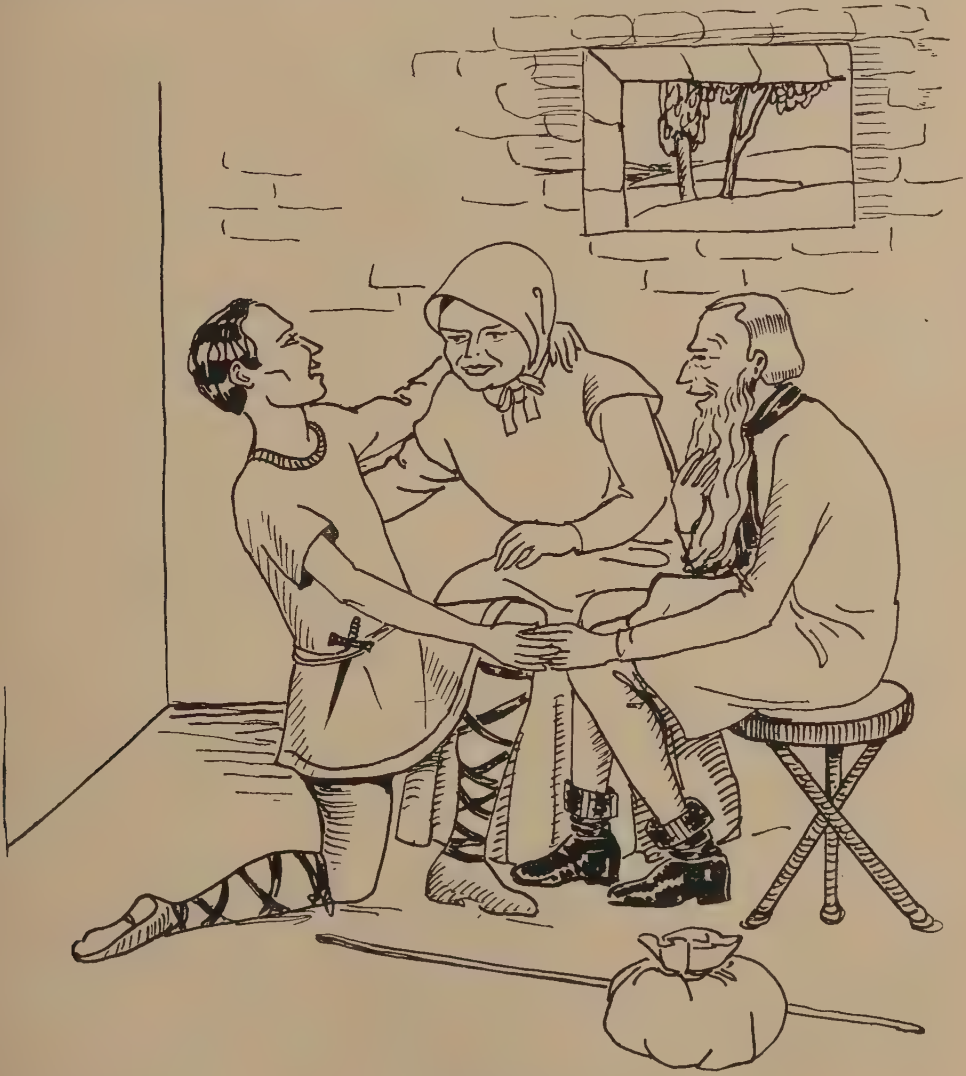


FIG. 134
Patrick Rejoins his Old Parents

A Voice Speaks to Him

In spite of the cruelty of his master, Patrick served him faithfully and well for some years, for he knew that, by doing his best, he was also serving God. One night as he lay sleeping it seemed as if a voice spoke to him in his dreams. "Go back to your country," said the voice; "there is a ship ready to take you."

Patrick was so certain he had heard a command he must obey, that in the darkness of the night he set off for the sea-shore many miles away. For hours he walked, till he was nearly dead with hunger, and very foot-sore and weary, but he never faltered in his purpose, because he was sure that it was a heavenly voice that had spoken to him.

At last he reached the shore; he saw a waiting ship, then he found the captain, but when he asked to be taken on board the captain sternly refused. "Away with you," he shouted; "get you gone, you miserable beggar!" That made Patrick so unhappy he did not know what to do, and in misery he turned away.

But at once the thought came, "I will ask God to help me." So he prayed, and his prayer was answered, for the captain sent some sailors to fetch him. He was told to come on board and sail with them to the land they hoped to reach in three days' time.

How disappointed Patrick was when they landed, to find it was not his home country they had reached, but a strange land he did not know; It was strange also to the captain and his crew, and finding no town near where they could buy food, they would have died of starvation, if Patrick had not told them to take courage, for he would ask God to help them.

His prayer was heard, and after many adventures Patrick found himself near his own old home. Dreading lest he should not be able to find his parents after so many years, he began to search for them. When at last he found them, his heart was full of happiness and joy

He Goes to Ireland

For some time he stayed with them, working hard, and thankful to be home once more, but as the months passed, he thought more and more about the people in Ireland, and how much they needed someone to teach them to be loving and kind. The more he thought about it, the more certain he was he must be the one to go. So after months spent in preparation, he said good-bye to his parents, his home, his friends, and set out on his splendid adventure.

Many are the stories that tell us of St. Patrick's courage in the face of danger, and suffering and want. Many are the deeds of kindness and love that he performed, bringing joy wherever he went. Never once did he forget he was carrying God's banner of love to rich and poor, prince and beggar.

And, since so much of his life was spent in that green isle across the sea we call Ireland, it is not surprising that he has been chosen as the Patron Saint of Ireland.

Language Training. Making sentences, telling the adventures of St. Patrick. Learning new words.

Handwork. Drawing and painting the flag of St. Patrick. (*See Section on Various Kinds of Social Functions*, p. 223.)

FABLES

WHEN selecting stories to tell children of seven and eight years old, it is a good plan to include among them some fables. The unusual form of a fable pleases them; they like the concise way in which it is told, the vivid word pictures, the quickly reached climax, the proverb or moral teaching with which it often ends.

Fables make excellent material for written composition, and should frequently be used for this purpose when children are making their first attempts in such work.

Good Exercises

An interesting way of using a fable, after the children have heard a few, is to let each member of the class invent a proverb to fit the story.

The results are read aloud by the children, class discussion follows, and then the best are selected by vote. These proverbs are useful as copies for the writing lesson, or as the title of the illustrations made for the fable.

Many children like to keep a special book in which they write and illustrate their favourite fables. Older children enjoy attempting to write original fables.

Speech Training. Acting the different fables. Practising different sounds and words in each fable, i.e. jig-jig, crash, roosting, etc. Learning and saying the proverbs at the end of each fable. Telling the fables.

Handwork. Modelling in clay the different things mentioned in each fable, for example the *shallow* dish and the *narrow* jar in "The Fox and the Stork." Paper-cutting or drawing of the different animals.

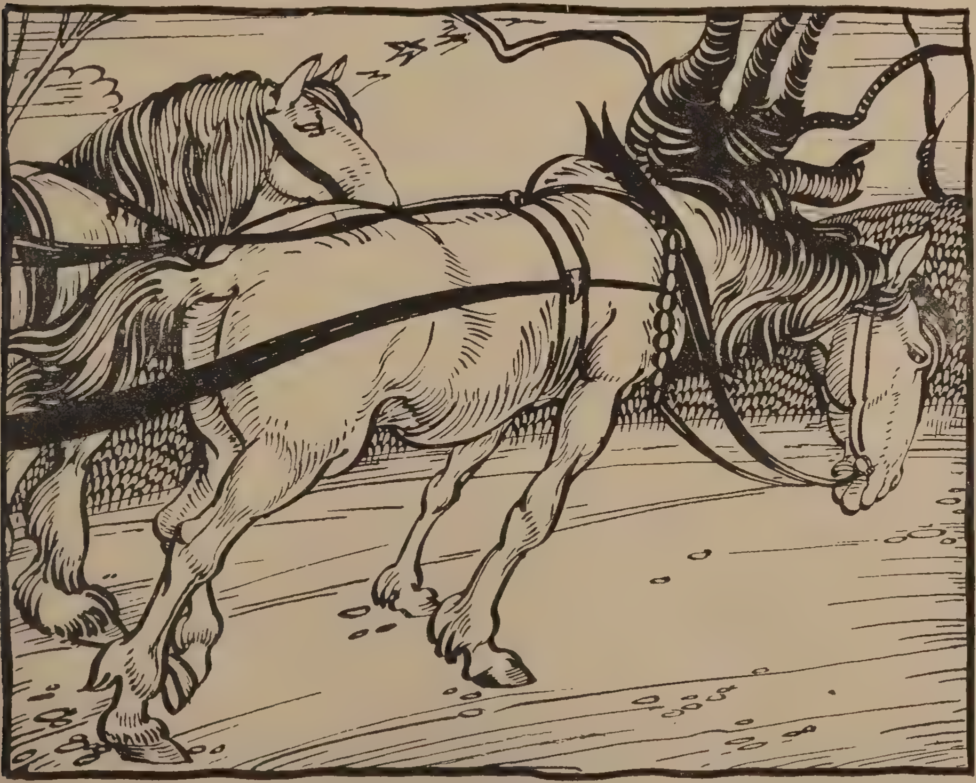


FIG. 135. *Two Horses, coming along the Road*

OLD HORSES KNOW BEST

(*Adapted from a Russian Fable*)

TWO horses were coming along a road. One was old and grey, the other was young. "Jig-jog, lig-log," sang their hoofs as they slowly came along. Each was pulling a cart filled with cups and saucers, plates, dishes, and all kinds of crockery. The loads were very heavy.

Presently the road began to go down hill. The old horse went very slowly and carefully, and this did not please the younger one. "We can go faster now," he said. "It is easy to go down hill. Hurry along with me, you are much too slow."

As he spoke he began to trot down the hill. After him came the heavy cart, rolling faster and faster every moment. Soon it began to push the young, brown horse, so that he could not stop himself from being bumped over the stones. Faster and faster they went, until there was a loud CRASH! A wheel had knocked against a large stone, and the cart had fallen into a ditch. There it lay broken and useless, while all the crockery was smashed in pieces!

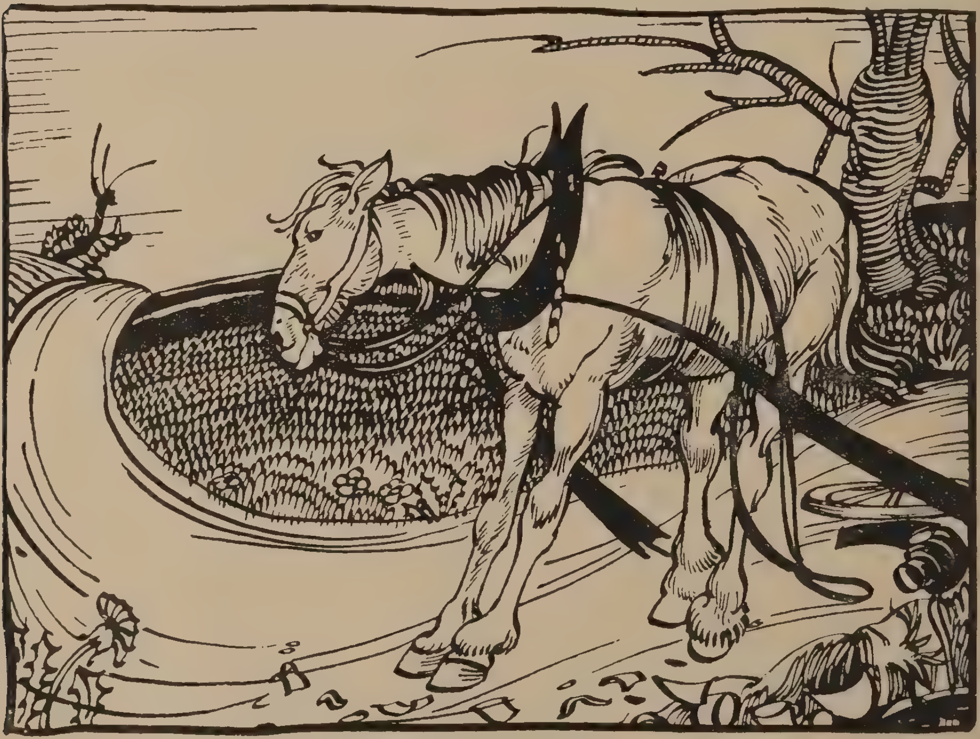


FIG. 136. *A Wheel had Knocked against a Large Stone*

By and by the old horse passed with his load. He was still walking very slowly, and everything in his cart was safe, not even a cup was cracked. As the young horse watched him disappear from sight he said, "There are still things that I have to learn. Old horses certainly do know best after all."

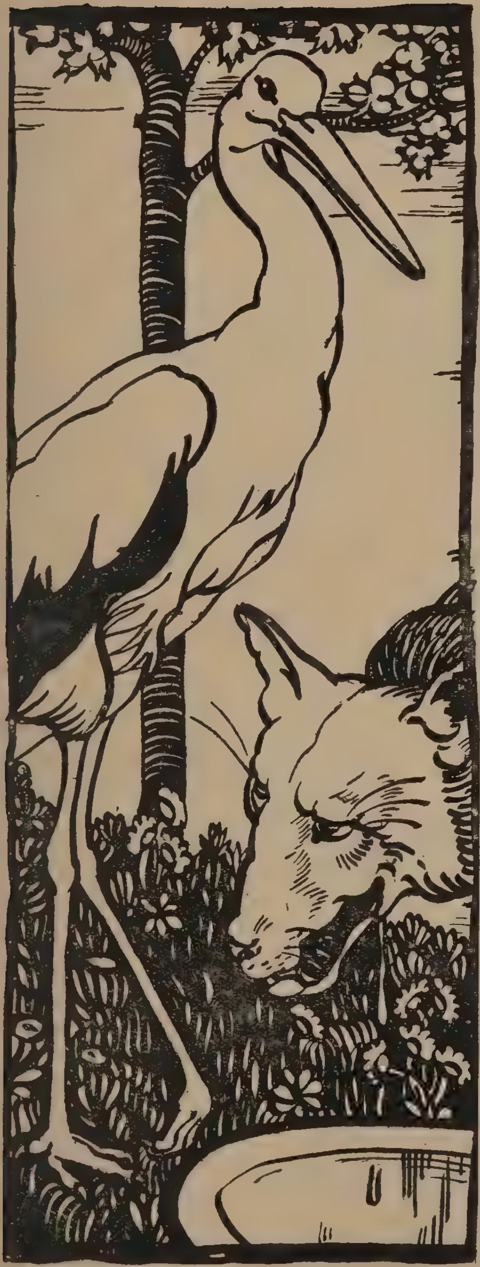


FIG. 137. *The Feast Prepared by the Fox*

THE FOX AND THE STORK

(*Adapted from Æsop's Fables*)

ONE day a fox invited a stork to dinner. Remembering what a long neck and beak his guest had, the fox decided to play a joke on her. He prepared some very thin soup which was served in a large shallow dish. This food the fox was able to lap up quite easily. The stork, however, could not manage to get a single drop into her beak. She was as hungry at the end of dinner as she had been at the beginning.

The fox pretended to be sorry that she had eaten so little, and asked if the food was not to her liking. The stork said little, but begged the fox to visit her the next day, and he gladly promised to do so.

When he reached the stork's house, the dinner was quite ready. To the fox's dismay it was sent to table in a jar that had a long, narrow neck. It was easy for the stork to take the food out of the jar with her long beak, but the fox could get nothing. All he could do was to lick the outside of the jar.

When dinner was over the hungry fox went home. " Well," said he, " there is one thing I have learnt to-day. Always do to others what you would have them do to you."

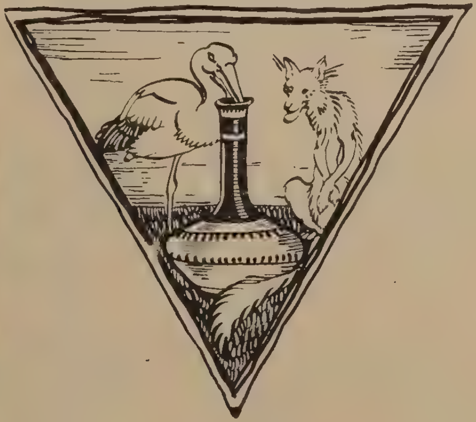


FIG. 138

The Feast Prepared by the Stork

THE DOG, THE COCK AND THE FOX

(*Adapted from Æsop's Fables*)

A DOG and a cock became great friends. "Let us set out on our travels together," said the dog. "I am quite willing to do so," answered the cock; so the next day they began their journey. When night came they had reached a thick wood. "The branch of a tree will make a good roosting place for me," said the cock. "This hollow in the trunk of your tree shall be my bed," said the dog. Soon both were fast asleep.

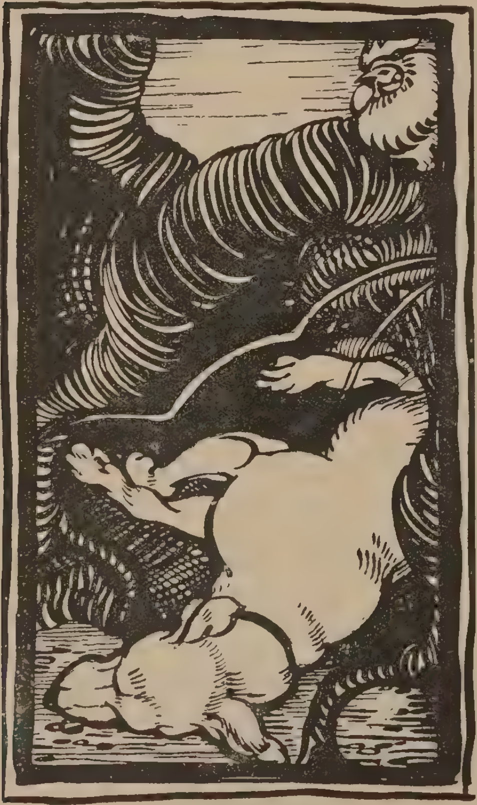


FIG. 139
The Dog and the Hen Sleep

At daybreak the cock stretched himself, flapped his wings, and cried "Cock-a-doodle-do" three times in a loud voice. A fox prowling in the wood heard him and thought, "That cock will make me a good breakfast."

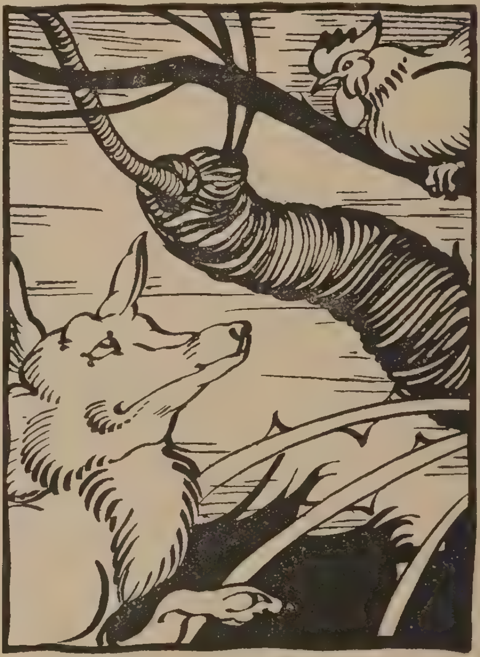


FIG. 140
Fox wants to be Friendly

Standing under the tree he looked up and told the cock how much he liked his singing, and that he hoped they would be friends. The cock, seeing the sly look in the fox's eyes, said, "Sir, go to the hollow in the trunk of the tree. My servant is there; he will open the door and let you into my house."

Thinking that all was well, the fox did as he was told. Out sprang the dog, and his sharp teeth and angry barks soon drove the fox far away from the tree.

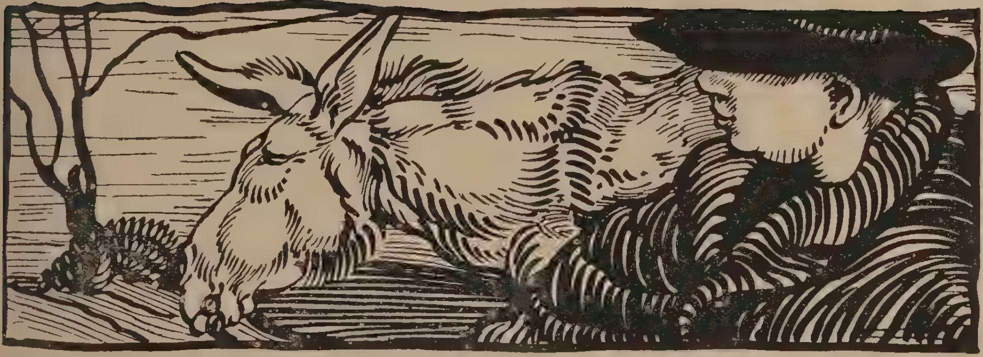


FIG. 141

The Merchant Sets Out with his Ass

THE LOAD OF SALT

(*Adapted from Æsop's Fables*)

THERE was once a merchant who needed a load of salt. Hearing that he could get all he wanted for a very little money at the seaside, he set off with his ass to buy some.

Having fastened a heavy load on the ass's back, he began the homeward journey. On the way they had to pass a stream. Here the road was very rough, and before long the ass stumbled over a stone, and fell with his load into the water. The salt melted quickly, and when the ass struggled to his feet, he found his load had disappeared. He went on his way very pleased that he had nothing to carry.

The next day the merchant set off for another load of salt. This one was heavier than the first. The ass, remembering what had happened before, fell into the stream on purpose to get rid of the salt. His master was very vexed at this second loss, and he made up his mind to punish the ass.

The following day he took the ass to the seashore and loaded him with sponges. On the homeward way they passed the stream once more. " I will get rid of this load on my back," said the ass to himself, and for the third time he fell into the water. There he lay expecting his load to melt. When he struggled to his feet he found to his great surprise that his burden was heavier than ever. The sponges were full of water.

As he trudged wearily along with them on his back he said, " It is better to do work that is given one with a contented spirit."

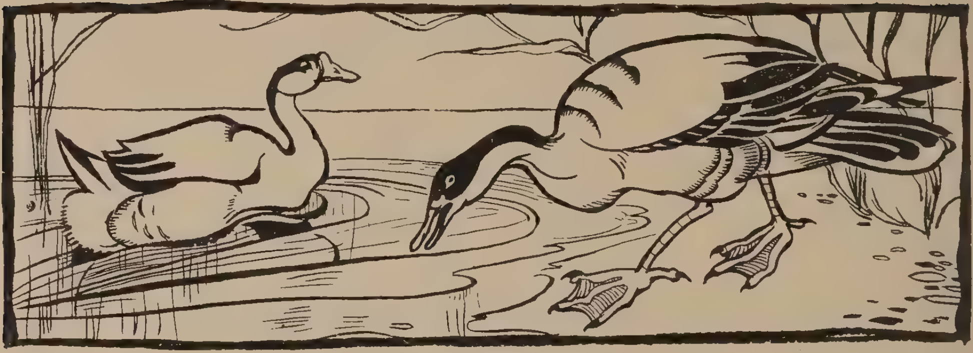


FIG. 142

The Geese Stayed there Day after Day

THE TORTOISE AND THE GEESE

A Hindoo Folk Tale Adapted

ONCE upon a time, in a land far from here, there lived a tortoise. He lived on the shore of a pretty little pond. He had never been away from the pond in all his life, and he did not know that there was anything else in all the world, but his own little pond.

One day two wild geese came to the pond. They came flying swiftly from far away. They liked the pretty little pond. They stayed there day after day.

The Geese Tell of Their Home Far Away

They and the tortoise became great friends. They told the tortoise of their home among the mountains far away from the quiet little pond.

" O, Brother Tortoise," they said, " It is a beautiful home. We live in a golden cave by the side of a silver stream. We are going back to our home. Come with us. We will show you many wonders."

" How can I go with you, my friends ? " asked the tortoise. " Your way lies through the air, and you can see for yourselves that I have no wings."

The geese said nothing then, but the next day they said, " Brother Tortoise, we have a splendid plan. We will find a long stick. Each of us will take hold of the stick with our bills. We will hold it near the ends. You must take tight hold of the middle of the stick with your strong jaws. Then we geese will spread our wings, and away the three of us will go."

" But, Brother Tortoise," the geese warned him, " you are very fond of talking. If you try to talk while we are in the air, you know what will happen."

" Yes," said the tortoise, " I know. Your plan is indeed a splendid one, my friends. I will go with you gladly, and I promise you I will not open my mouth."

The Tortoise Forgets His Promise

A stick was found. The geese and the tortoise took firm hold of it. The tortoise was in the middle, a goose at each end.

Up they rose and away they flew.

Some men down below saw the strange sight. They shouted, " Oh, see the wild geese and the tortoise ! How funny the tortoise looks. Ha, ha ! Ha, ha ! " The tortoise did not like to be laughed at. He wanted to say, " Is it any of your business ? You rude fellows ! " He forgot his promise to the geese, opened his mouth to speak, and down he fell.

The poor tortoise fell down, down, with a crash to the marble pavement of the court-yard of the king's palace. The king and all his court heard the crash, and came running out to see what had happened. There they saw the tortoise.

"It is a dead tortoise!" they cried. "How came he here?"

Just then a wise man wandered into the court-yard. The king saw him and said, "You are a wise man. Tell us, how did this happen?"

Now the wise man had seen the tortoise with the geese high overhead. For a moment he was silent. Then he said,

"Oh, mighty master, heed this well:
The tortoise talked too much.
And hence to earth he fell."

Language Training. Retelling the story. Saying the words of the wise man.

Handwork. Paper cutting or tearing of geese and tortoise.

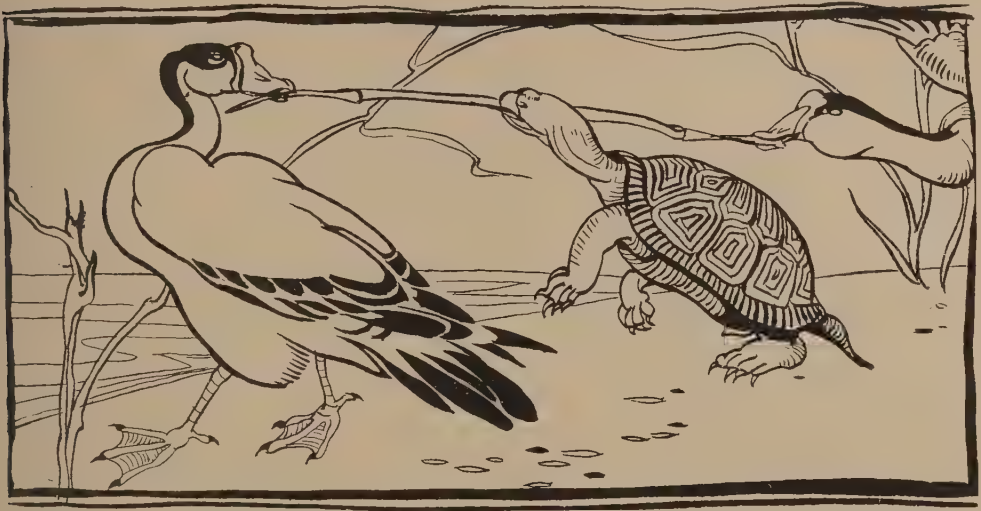


FIG. 143
How the Tortoise Travelled

THE ELEPHANT AND THE DOG

An Old Hindoo Folk Tale

LONG ago, in a far away land, there lived an elephant. This elephant was very large and very strong. His master was a prince. The prince liked to go hunting. He hunted great, fierce tigers in the jungle.

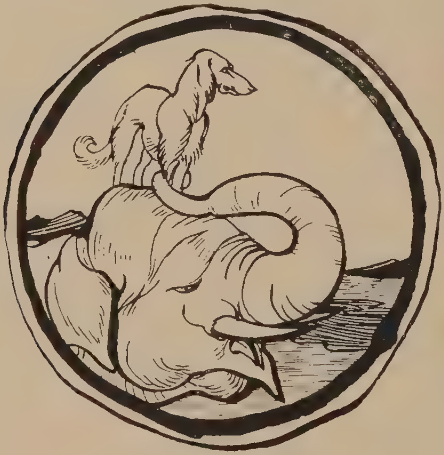


FIG. 144

The Dog Rides Down to the River

When the prince went hunting, he sat in a seat on the elephant's back. The elephant carried his master safely through many a hunt.

On holidays the prince rode again on the elephant's back. Then the elephant looked very splendid indeed. His head and his trunk were painted in gay colours. His huge body was covered with hangings of bright silks. What a proud-looking elephant he was!

A Little Dog Visits the Elephant

The elephant lived in a big shady yard. One day a little dog came into the yard. He was a pretty little dog. His soft, curly coat was brown, and his eyes were brown too. The little dog did not seem to be at all afraid of the great elephant. He trotted up to the huge beast and wagged his tail in greeting. The elephant stroked his little visitor with his long trunk, and the two became friends.

From that day the little dog lived in the shady yard. He ate some of the elephant's food, and he slept near his huge friend at night.

Every day, when the elephant's keeper led him down to the river, the little dog went too. The elephant curled his trunk around his little friend's body, and swung him up to a safe resting place on his great head. There the little dog stood, and so rode safely down to the river.

When they came to the river, in they both went. They splashed about in the cool water. The elephant lay down on one side and then on the other. The little dog swam around him. What fun they had!

A Stranger Buys the Dog

A year passed by, and then one day a strange man came into the yard. He saw the friendly little brown dog. He said to the keeper, "I will buy that little dog from you." At first the keeper said, "No, I will not sell him." But he needed the money, so he sold the little dog, and the stranger carried him away.

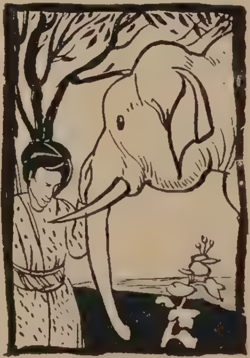


FIG. 145

The Wise Man Looks at the Elephant

After his little friend was gone, the elephant behaved in a very strange way. When his keeper brought food to him, he would not eat it. When his keeper led him down to the river, he would not go in. At night he did not sleep, but stood swinging his great trunk to and fro.

The prince heard that his elephant would not eat, so he came to see what was the matter. "Is my elephant sick?" he asked.

"No, mighty prince," said the keeper. "He is not sick. But I cannot tell what ails him."

"Let the wise men be called," said the prince.

The wise men came. They looked at the elephant and said, "O, mighty prince, your elephant is not sick. But we cannot tell what ails him."

A Wise Man Comes

Just then a wise man, from far away, came into the yard.

He looked at the elephant. He talked with the keeper. Then he said to the prince, "O, mighty prince, your elephant is not sick. He is sad and lonely. He misses his friend, the little dog."

"What little dog?" asked the prince. Then the keeper told him all about the little brown dog.

"Let the stranger who bought him be found," said the prince. "The little dog must be brought back."

So messengers were sent here and there. The stranger was found. The little dog was brought back. How glad the two friends were when they saw each other! The little dog wagged his tail and barked for joy. In a moment, he was lifted and swung to his old seat on his friend's great head.

Then the elephant turned to the food, which his keeper had set before him, and ate and ate.

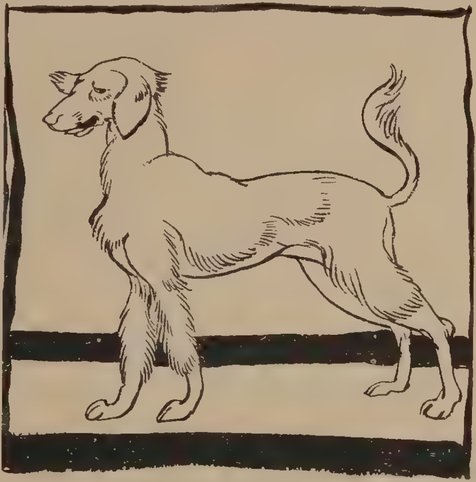


FIG 146

The Little Dog Wagged his Tail for Joy

The two friends were never parted again. They lived on in the shady yard, and people came from far and near to see the strange sight of a tiny dog and a huge elephant who were friends.

Language Training. Making sentences about the elephant. Telling what the wise men said.

Handwork. Colouring an outline copy of an elephant. Trying to draw or model one, or cut one in paper. (*See Geography Section.*)

THE DEER, THE TORTOISE, AND THE WOODPECKER

An Old Hindoo Folk Tale

A DEER once lived in a great forest. In the forest was a little lake. This lake was the home of a tortoise, and near the lake, at the top of a tall tree, lived a woodpecker. And these three, the deer, the tortoise, and the woodpecker, were great friends.

One day a hunter came that way. He saw the marks of the deer's feet leading down to the water. "Ha, ha," he said to himself, "I will set a trap. I will catch this deer as he goes down to the lake to drink."

So he made a trap of leather which was as strong as iron. He set the trap and went back to his home. That very night the deer was caught in the trap. He cried for help and his cries were long and loud. The tortoise and the woodpecker heard him, and came to help their friend.

The Woodpecker has a Plan

At first they did not know what to do. Then a plan came into the woodpecker's head.

"Brother Tortoise," he said, "You have strong jaws. Tear at these bands of leather, and set our poor friend free. As for me, I shall go to the hunter's home, and keep him from coming to this place until your work is done."

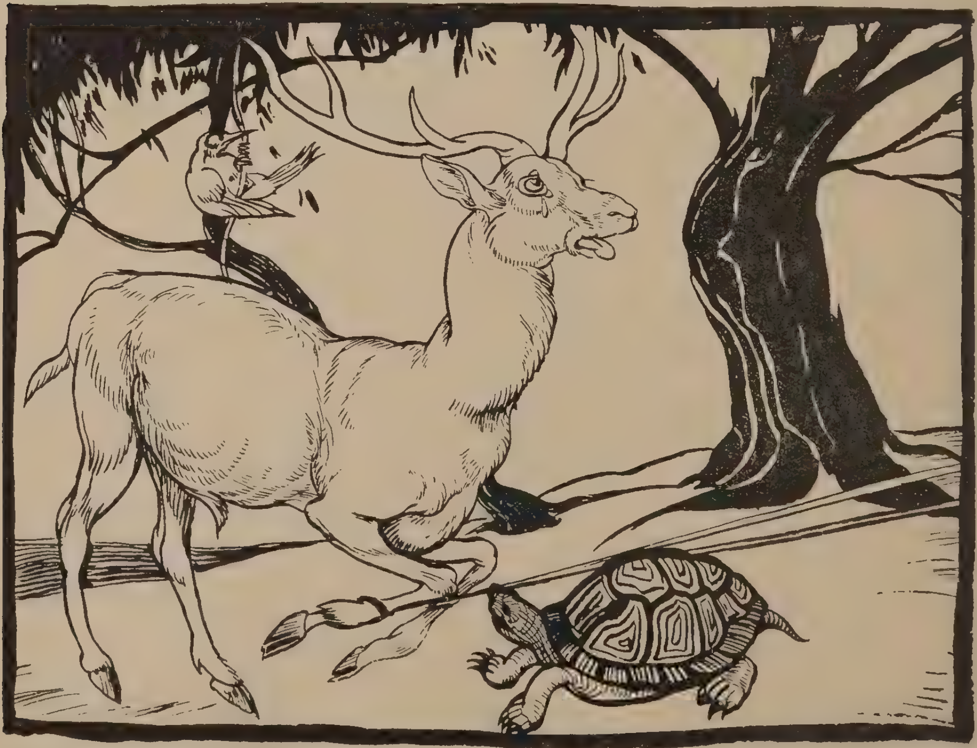


FIG. 147

The Tortoise and Woodpecker come to the Rescue

The tortoise began to tear at the stout leather bands.

The woodpecker flew to the hunter's home. It was not yet day. The woodpecker waited and waited. Just as the sun arose, the hunter opened the front door of his house. The woodpecker flew at him, and flapped his wings in the hunter's face.

The hunter cried, "This bird has come to bring ill luck to me. I will leave my house by the other door." He went to the other door, but the woodpecker was there waiting for him. Again he flapped his wings in the hunter's face.

The hunter ran quickly through his house, and tried to go out at the front door before the woodpecker saw him. But the woodpecker was waiting for him. This happened again and again.

At last the woodpecker thought that the deer must be free. He left the hunter and flew down to the lake. The deer was free, and was safe in the woods. But the poor tortoise was so tired that he could not move.

The Tortoise is Caught

The hunter came. He was very angry when he saw that the deer had fled and his trap was ruined. He picked up the tortoise, threw him into a bag, and hung the bag high up in a tree. Then away he went, into the woods, to look for the deer.

By and by the deer came back to the lake, to see how his two friends were. The woodpecker showed him what the hunter had done to the tortoise. With a prong of his horns, the deer lifted the bag down from the tree. He tore the bag open, and set the tortoise free.

Then the deer and the tortoise hid themselves, for well they knew that the hunter would return. The woodpecker flew to his place in the top of the tree and watched.

After a long time the hunter came. He was weary from tramping through the woods. He saw nothing of the three friends. But he found his bag lying on the ground. He picked it up and saw that it was torn into rags. "Ah," he said, "that woodpecker was indeed a bringer of ill luck to me. I shall never come to this place again."

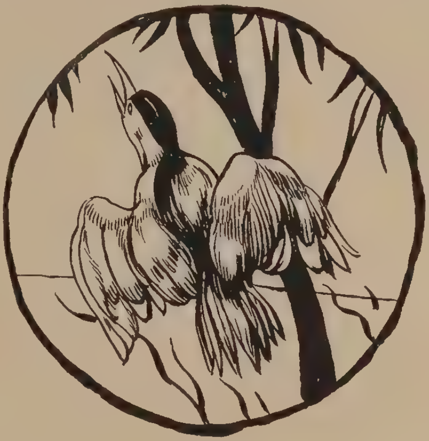
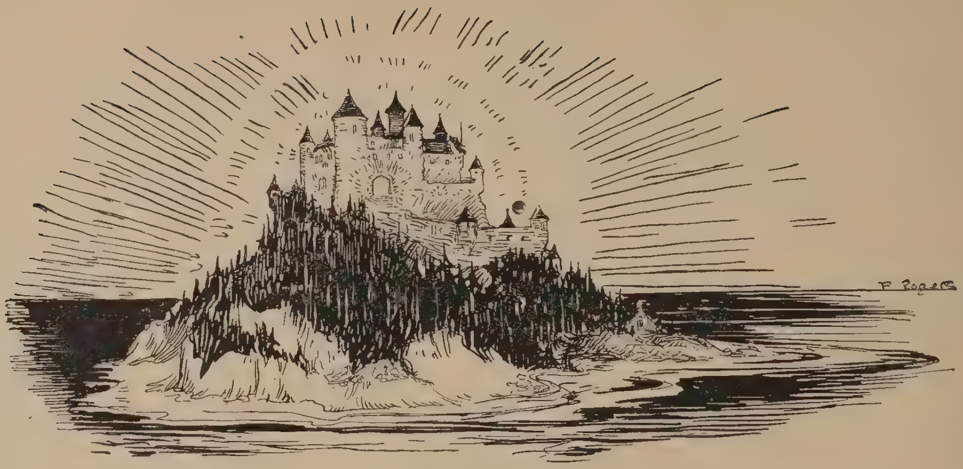


FIG. 148
The Woodpecker

As for the three friends, they lived on in peace and happiness to the end of their days.

Language Training. Learning to say the word tortoise, etc., correctly. Telling the woodpecker's plan to save the deer.

Handwork. Modelling the tortoise. Modelling the little lake and the forest.



MARTIN'S ISLAND

A Continued Story

Monday: MARTIN MEETS THE CLOWN
Tuesday: THE PRINCESS'S BALL
Wednesday: FIREWORKS!
Thursday: THE PIRATE'S CAVE
Friday: THE CLOWN BORROWS MARTIN'S POKER

1. MARTIN MEETS THE CLOWN

IT happened on Martin's eighth birthday—the night before he went home to London, and while he was staying with his mother and father in a big house by the sea.

There was a little island that stood up out of the sea, about a quarter of a mile from the mainland. In the middle of the island was a tree-covered hill, and on the top of the hill was a beautiful old castle. At night-time lights twinkled in the windows of the castle, and Martin used to stand at his bedroom window and watch them, and wonder.

At the bottom of the tree-covered hill there was one little tiny light that twinkled all alone, and Martin used to pretend to himself, "That's the cottage at the foot of the hill where the Clown lives."

Martin was very interested in clowns. He had seen one in a Christmas pantomime, and now he always had a clown in the games he played by himself. A clown was jolly, and made people laugh; he was cheeky and unafraid, and never got found out. Martin thought that he would like to be a clown when he grew up.

Martin Makes up His Mind

The night before Martin went home to London was a bright moonlight night. It was low tide. At low tide a pathway of smooth, flat stones was uncovered that led from the mainland to the island. Martin stood looking down at the stone pathway. He had often asked his father if he would take him over to the island, but his father had always replied, "Not to-day. We'll see about it some other time." But the other time had never come.

Martin sighed. "If only I were a clown," he said to himself, "I would say 'Houp-la!' and put a lot of sausages in my pocket, pick up the poker, and run straight over to the island and see who lives there this very minute."

He thought about this for a while. Then he looked at the clock on the mantelshelf. His mother and father had said good-night to him, and had gone out to dinner. Everybody else was down in the kitchen. Nobody would miss him. *Why not go?* He had not undressed yet. "I'm going home to-morrow," he reminded himself.

"A clown wouldn't be afraid to go," thought Martin.

His eyes caught sight of the poker in the hearth.

There were no sausages handy to snatch up and put in his pocket, but there was the poker—waiting for the clown!

Suddenly Martin made up his mind. He crossed the room, picked up the poker, and tucking it under his arm, crept softly down the stairs and out of the back door. Slowly and quietly he made his way down the garden and through the gate on to the shore.

Nobody Sees Him

He paused a moment, and looked back, and listened. But nobody had seen him.

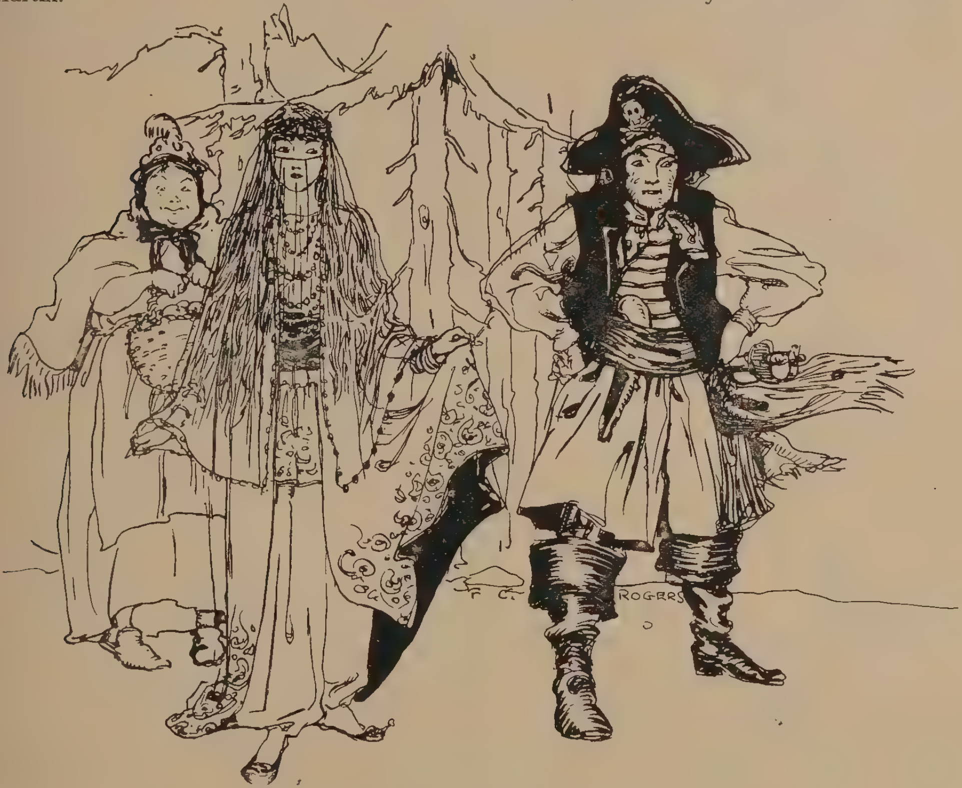


FIG. 149

Martin sees Three People and ——

He set off at a run along the stone pathway which was gleaming in the moonlight like silver. Ahead of him the cluster of little lights gleamed and twinkled, like a handful of jewels. Martin's eyes shone with excitement. He felt very brave. In a few minutes he reached the other side, and found himself standing on a pebbly beach at the foot of the tree-covered hill. He could hear music playing somewhere.

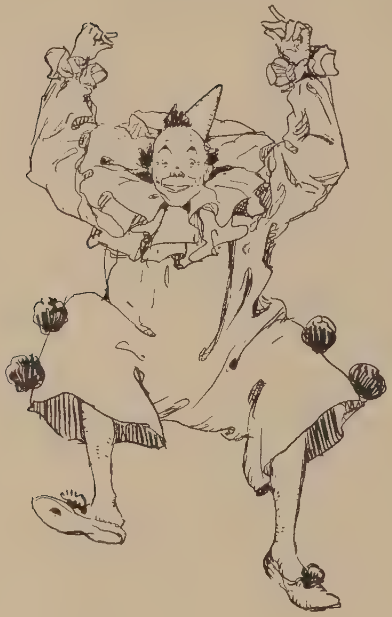


FIG. 150

A Clown

Stumbling over the beach, he crossed a road to a white gate that opened on to a wide carriage drive. He had only walked a little way up the drive when he heard the sound of voices coming towards him. He stopped, hesitating.

Before he could make up his mind what to do, four figures came out from a group of trees near by. They paused as they caught sight of Martin, standing there, wide-eyed, with the poker tucked under his arm.

Martin Meets Four People

The first figure looked to Martin like a beautiful Eastern Princess, dressed in yellow, with long strings of blue and gold beads around her neck. The second was like a Pirate that Martin had seen in a picture at home. The third was a round-looking, fat Old Lady, with a basket of apples on her arm. Then Martin saw the fourth person, and he gave a quick gasp.

" Houp-la ! Here we are again ! " cried the fourth person, giving a leap into the air and dancing towards Martin.

Martin could scarcely believe his ears and eyes. For standing before him, a wide smile on his white, chalky face, was a Clown !

2. THE PRINCESS'S BALL

" HERE'S a little boy ! " cried the Clown. " Ho, ho ! and he's got my poker ! "

" What's a little boy doing here at this time of night ? " said the Pirate.

" Where's your mother, duckie ? " asked the old Apple-Woman.

But the Eastern Princess just smiled at Martin and didn't say anything at all.

" I expect he's come over from the mainland," said the Clown.

" What ! All over on the slippery wet stones ! Bless my heart ! " said the old Apple-Woman.

What He Came for

" What's he come for, anyway ? " growled the Pirate.

" I—I came to see . . ." began Martin shyly, then stopped.

" Came to see what, dear ? " asked the Princess gently.

" All the little twinkling lights," said Martin

" Of course he did," cried the Clown. " And I'll be bound he said to himself, ' I believe a beautiful Princess lives in the castle on the island ! ' . . . And so she does. So she does," shouted the Clown gleefully, thrusting his hands deeply into his trousers pockets and bending forward to peer into the face of the Princess.

The Princess smiled. " Don't be so absurd ! " she said. Then she turned to Martin. " What's your name, dear ? " she asked. Martin told her.

" Martin, Martin, aren't you a lucky fellow ! " said the Clown. " You've come here on the night of the Princess's birthday—just when a grand ball is being given in her honour. Would you like to come to the Princess's ball, Martin ? "

Martin's eyes shone. "Oh, yes, please," he said.

"But what about him getting back home?" said the old Apple-Woman. "The tide's coming in."

"I'll row him back in my boat," growled the Pirate. Although the Pirate had a gruff, growling voice, he had kind eyes, so nobody could feel in the least afraid of him.

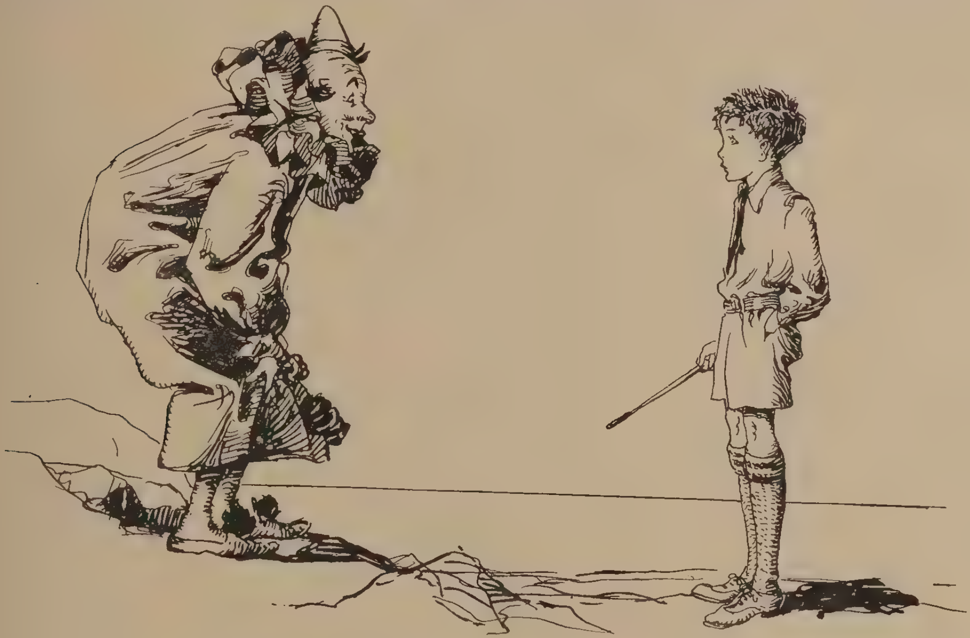


FIG. 151

"Here's a Little Boy!"

Fancy Dress

In a few minutes Martin discovered himself telling his new-found friends about how he had longed to see what was on the island, and how he was going home to London to-morrow.

"Martin, Martin, why did you bring the poker with you?" asked the Clown, raising his eyebrows with vigour.

But Martin was too shy to tell him why, so he pretended he hadn't heard.

"If you are going home to-morrow, you must certainly come to my ball to-night," said the Princess in her gentle voice.

"It's a Fancy Dress Ball," said the Pirate.

"Well, some people would call it that," grinned the Clown. "But I wouldn't."

"He means, duckie, he really is a Clown," explained the old Apple-Woman. "But it's only on nights like this that he can wear his proper Clown clothes. On ordinary days he has to dress like ordinary people. . . . Just the same as *we* do—the Princess, the Pirate, and myself I wish I could always go about in old shoes and a shawl and a bonnet, comfortable-like, with a basket of apples on my arm ——"

"Let's Be Our Real Selves"

"Now come along, come along," broke in the Clown. "This is a special night when, as you say, dear lady, we can be our real selves. . . . Let's all be our *real* selves to-night, and try to remember, all of us, what we would have liked

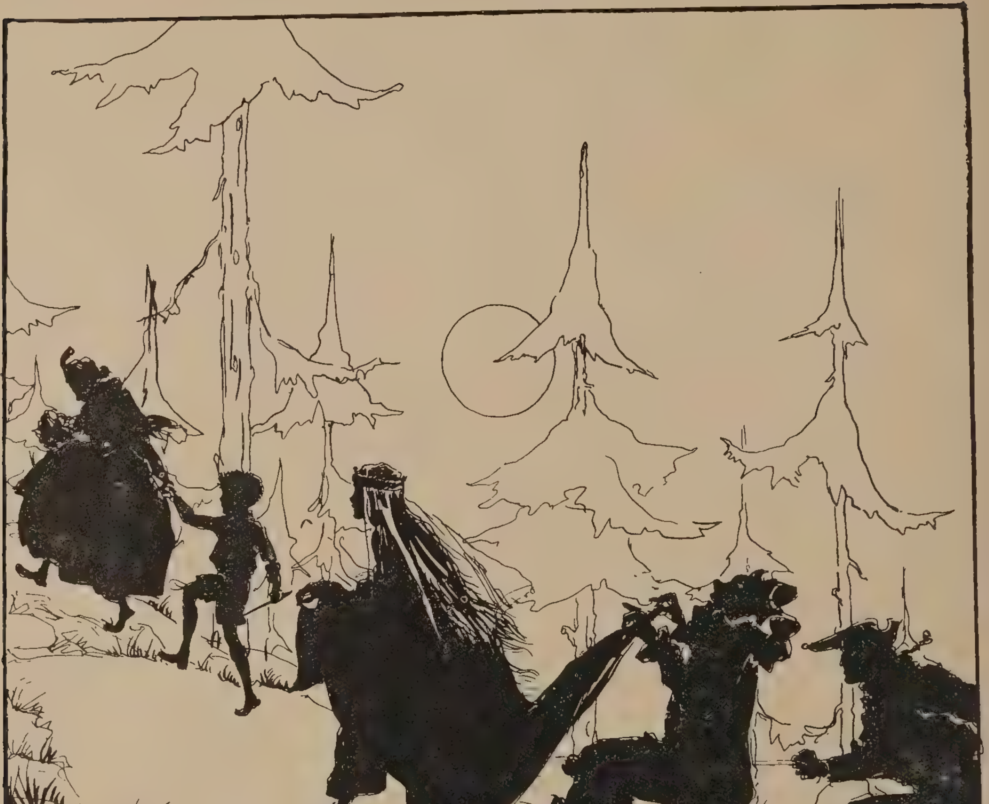


FIG. 152

They all Set off up the Hill

to find on an unknown island when we were eight years old!"

"I'm eight years old," said Martin.

"Just fancy that now! You surprise me!" said the Clown. Then he threw back his head and burst out laughing "I'm a Clown! I'm a Clown!" he cried, and danced across the road and back again. The Princess, the Pirate, and the old Apple-Woman looked at each other, and nodded gravely.

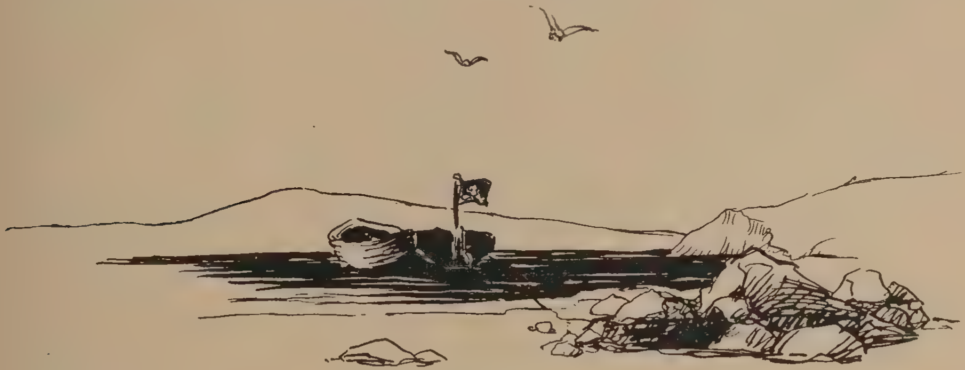


FIG. 153

The Pirate's Boat

"I am a Princess," said the Princess, smiling down at Martin.

"By thunder! And I'm a Pirate!" growled the Pirate.

"You can see what I am," said the old Apple-Woman. "Come on, duckie," and she held out her hand to Martin.

"Houp-la!" cried the Clown. "To the Princess's Ball!"

And they all set off up the hill

3. FIREWORKS!

MARTIN grasped the old Apple-Woman's hand tightly as they went along up the carriage drive, and listened eagerly to all that his four companions said to each other. Sometimes they spoke in a foreign language and he couldn't understand.

When at length they reached the big smooth lawn in front of the castle, Martin gave a gasp of delight. The lawn was crowded with dancing people, all dressed in the loveliest and quaintest costumes—black and white pierrots, silvery fairies, crimson roses, blue sailors, brown gipsies—they were all there dancing and laughing and talking, while the band played loudly and merrily. Around the lawn lighted lanterns hung from the trees, while in the background the great castle towered up, every window in its walls blazing with light. And overhead, the calm round moon looked down from the night-blue sky.

Martin Dances

"The first thing to do at a dance is to dance. Can you dance, duckie?" asked the old Apple-Woman.

"No," said Martin.

"Well, come along and dance with me," she replied; and before Martin realized what was happening, he found himself in the grasp of the old Apple-Woman, and turning round and round among the other dancers. The basket of apples that she carried joggled loudly against his ear, and it wasn't really comfortable dancing with the old Apple-Woman, because she kept treading on his toes. But the old woman herself seemed to enjoy the dance so heartily, and beamed down with such pleasure when she said to Martin: "Are you enjoying yourself, duckie?" That he felt obliged to say: "Yes, thank you very much."

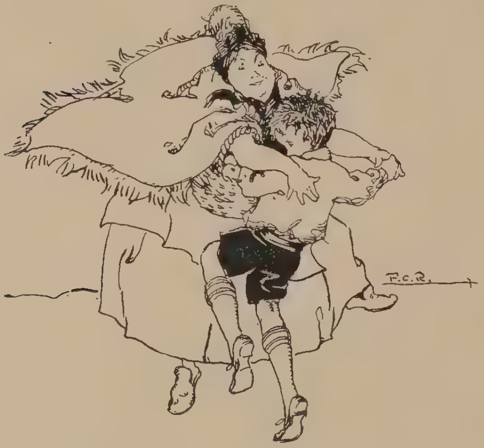


FIG. 154

Martin Dances with the Apple-Woman

At last they stopped to rest, and sat down on a seat under the trees at the edge of the lawn.

Strawberry Ices!

"The second thing to do at a dance is to have an ice-cream," growled a voice in Martin's ear. It was the Pirate. He led Martin up to a stone terrace outside the castle, on which were arranged numbers of little round tables covered with blue cloths, and they both sat down at a table and had strawberry ices. Martin had never, in all his life, had a strawberry ice with a Pirate on a moonlight night after bedtime, and it was lovely.

"Houp-la!" said another voice in Martin's ear. "The third thing to do at a dance is to see the fireworks. Come along."

It was the Clown. Grinning at Martin, he held out both hands, and Martin went away with him and joined the crowd that had now gathered at one end of the lawn, and was standing gazing upwards expectantly, waiting for the fireworks to commence.

The Fireworks Begin

"Oo—Oo—Oo!" A roar went up from the crowd as the first rocket hissed up into the air and broke. One after another the fireworks followed each other, and gold and red and blue

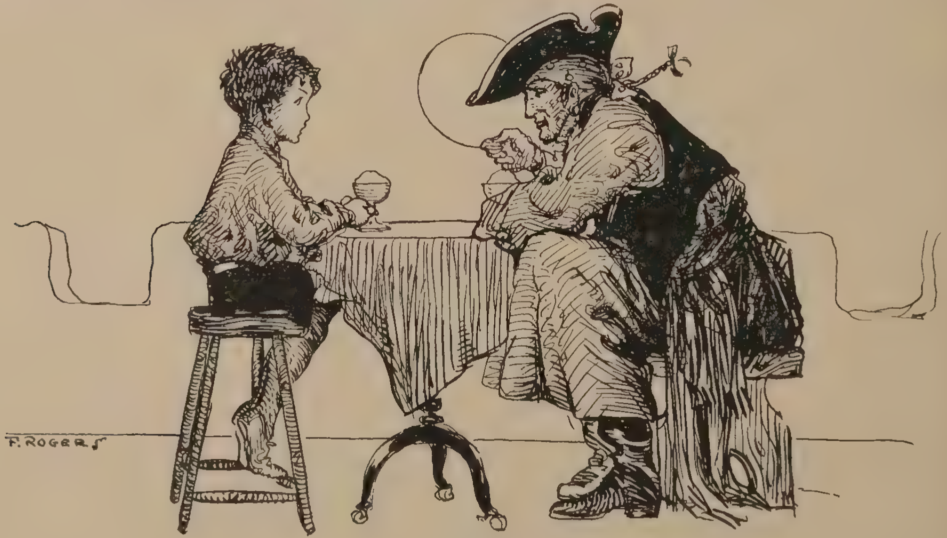


FIG. 155

Ice-cream with the Pirate

stars rained from the sky. Martin clasped his hands tightly together. As the fireworks got more and more wonderful everybody began to cheer, and Martin cheered as well, and the Clown cheered most of all.

After the fireworks were over, somebody made a speech about the Princess's birthday, and everybody cheered again. The Princess stood on the stone terrace and made a gracious little speech of thanks, and there were more cheers, and then the band struck up and dancing began again.

Martin felt a touch on his arm, and turning round he saw the Princess beside him. "The fourth thing at a dance," she said in her gentle voice, "is a little gift for Martin." And she handed him a small parcel done up in brown paper.

Inside the parcel Martin found a splendid penknife with three blades. Martin stammered his thanks.

The Princess's Castle

"If you would like to see over my castle, I will take you," said the Princess, and she led him inside the castle and showed him many of the beautiful rooms, and long, winding passages. "Now you know what it looks like behind the little twinkling lights," she said, when they were out on the stone terrace again.

All at once Martin found the Clown at his elbow once more.

"Martin, Martin, why did you bring the poker with you?" said the Clown in his ear.

But Martin was too shy to tell him, so he pretended he hadn't heard.

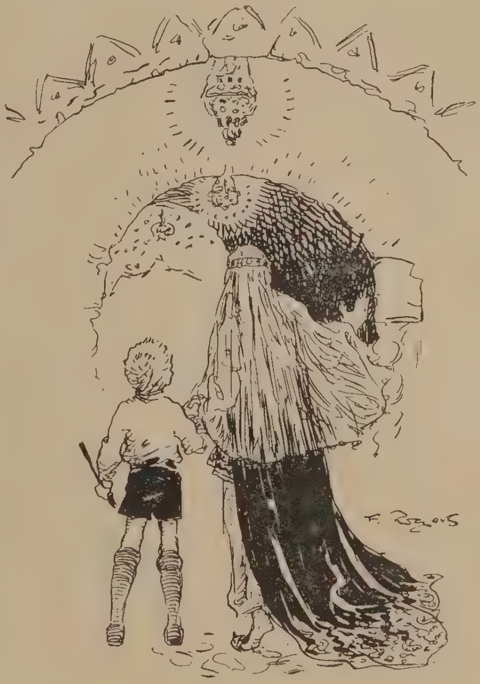
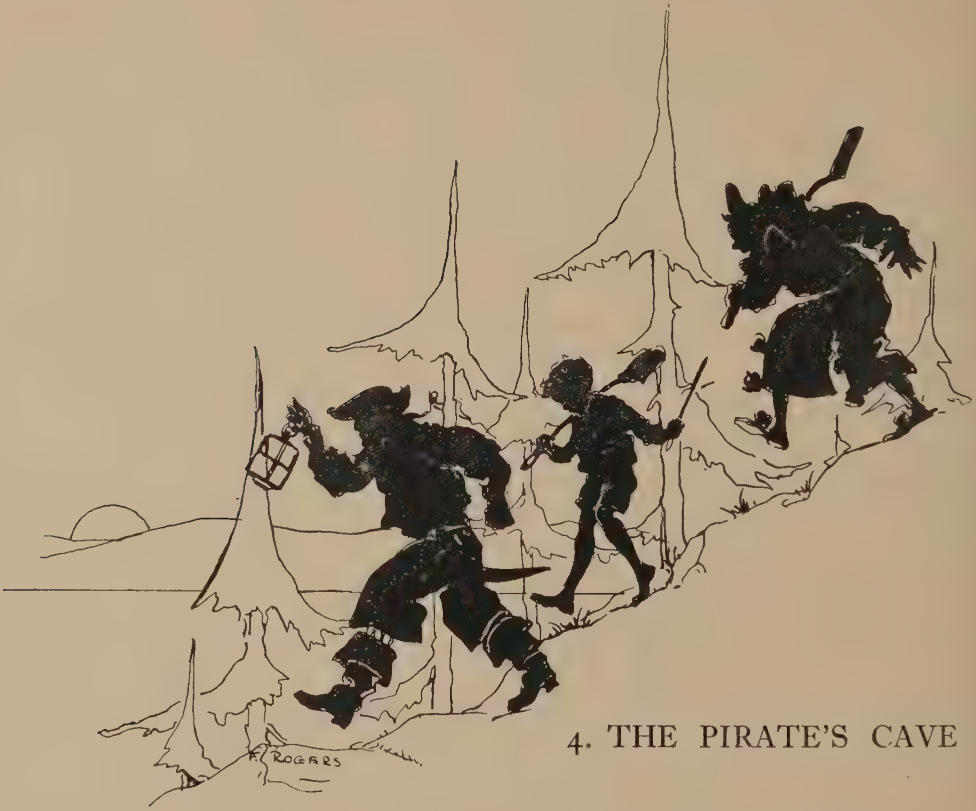


FIG. 156

Inside the Princess's Castle



4. THE PIRATE'S CAVE

PRESENTLY there came an interval in the dancing, and a man dressed like an Admiral got up on the terrace and announced a Hidden Treasure Hunt. He threw a crowd of little envelopes up into the air, and everyone stopped laughing and chattering and rushed to catch an envelope. Inside these were clues as to where the Treasures were hidden.

Martin didn't get an envelope himself, neither did the Clown ; but the Pirate got one, and he said he would share it with Martin and the Clown

Opening the envelope the Pirate took out a piece of paper on which the clue was written. He read aloud—

" COCKED HAT. DIG. 2 BY 3."

" What does it mean ? " said Martin.

" Well, there's a funny-shaped rock called The Cocked Hat just inside the entrance to the Pirate's Cave—called after me," said the Pirate. " The clue says ' Dig '—so I take it we must dig in the cave near the Cocked Hat rock. But what can 2 by 3 mean ? "

" Ah, ha ! " cried the Clown. " I know. There are three of *us* here now—well, two of us stand by while three of us dig ! "

What Does It Mean ?

" Don't be such a clown ! " growled the Pirate. " How can two of us stand by while three of us dig, when there's only three of us altogether? . . . No, it must mean some measurement I expect—like 2 yards by 3 yards, or something like that. Have you got a tape-measure?" he asked the Clown.

"No, but I've got this," grinned the Clown, and out from his pocket he drew a long string of sausages.

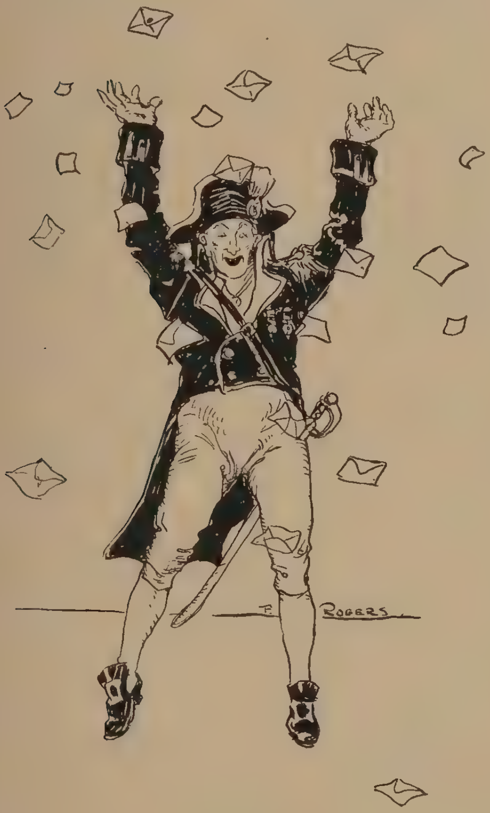


FIG. 157
The Admiral Throws a Crowd of Envelopes into the Air

"Bah!" scoffed the Pirate.

While the Clown fetched a couple of spades from somewhere for digging, the Pirate went and got a lighted lantern; and then the three set off down a steep narrow path that led through the trees to the shore below.

"Martin, Martin, why did you bring the poker with you?" sang the Clown, as they went along. But once again Martin pretended that he didn't hear.

They crunched over the pebbly beach for a few minutes, then rounding a corner of the island, they saw a group of great black rocks rising up by the water's edge.

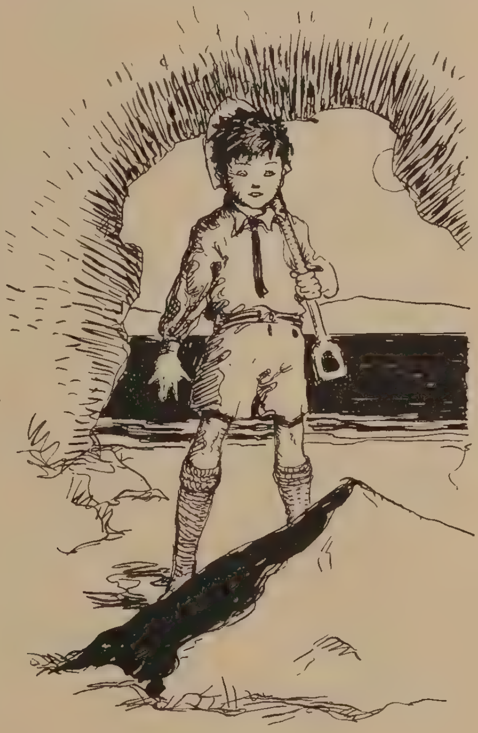


FIG. 158
A Low Black Rock

They Reach the Cave

When they reached these, Martin saw in the side of one of them a wide opening—the entrance to a cave. The Pirate lifted his lantern and flashed it across the entrance.

"Mind your heads!" he growled, and stooping he entered the cave, followed by the Clown and Martin.

The floor of the cave was a mixture of wet sand and rocks with little pools of water around them. A few yards from the entrance the Pirate stopped. " Here's the Cocked Hat," he said, raising his lantern.

The light fell on a low, black rock, curiously shaped. It certainly did look rather like a cocked hat, Martin thought, his eyes bright with excitement.

" Hold the light," said the Pirate to the Clown, " while the boy and I dig."

" Two by three, two by three," sang the Clown, pulling out his string of sausages and measuring on the wet sand. " Two to the north, and three to the west. That's the spot to dig." And he dug his heel into the sand.

" Who ever heard of measuring with sausages ! " said the Pirate scornfully.

" Why, *you've* heard of it, of course," said the Clown. " *You've* just heard *me* measuring with sausages."

They Start to Dig

The Pirate began to growl to himself, but all the same he started to dig where the Clown had put his heel ; and Martin, very proud and pleased to be allowed to help, started to dig too.

For some time they worked away vigorously, only pausing now and then, whenever the Clown, forgetting that he held the lantern, wandered away to look at something in another part of the cave.

" Hi ! Bring the light back ! " the Pirate would shout each time, and the Clown would come dancing back, grinning.

" By thunder ! " cried the Pirate suddenly. " What's that ? "

He stopped digging and pointed a large brown finger at the sand that Martin had just turned over. Out of the sand was sticking the corner of a black tin box !

5. THE CLOWN BORROWS MARTIN'S POKER

THE Clown and the Pirate pounced on the black tin box, pulled it out of the sand, and forced it open. Martin watched with eager eyes. Inside the box were some fine cigars.

The Pirate and the Clown each took one and lit it and began to smoke ; and as Martin couldn't smoke they gave him the bands off the cigars instead.

" I like this game of finding presents," said the Clown. " Let's play it again. You hide something," he said to the Pirate, " then tell me where it is, and I'll find it and keep it."

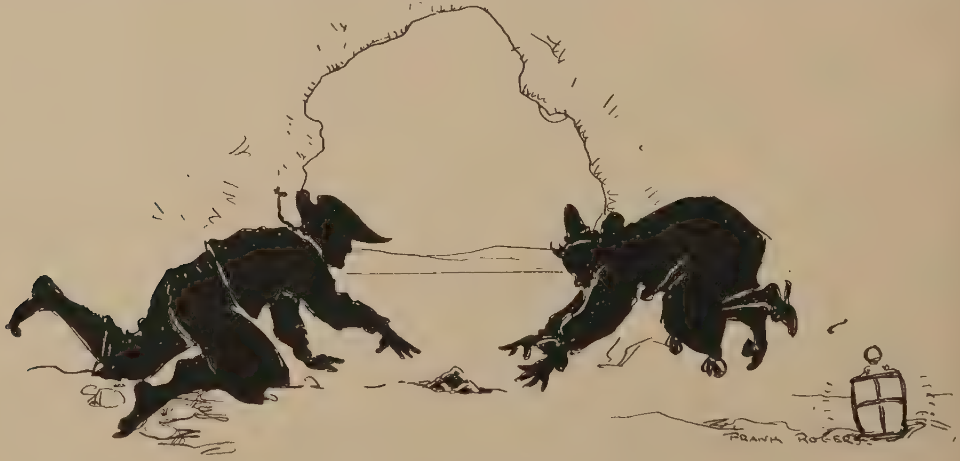


FIG. 159
They Pounced on the Black Box

" Bah ! " said the Pirate scornfully.

They returned along the pebbly beach. And then it was that Martin caught sight of a little light ahead of them, twinkling at the bottom of the hill near the water's edge, all alone. With a thrill of excitement he realized that it was the little lonely light that he could see from his bedroom window.

" But you could go and live in the castle too, couldn't you ? There's plenty of room," said Martin earnestly. " Or the Princess could come and live in the cottage, couldn't she ? "

" I'm afraid to ask her," said the Clown.

" Bah ! " said the Pirate scornfully.

" I thought Clowns weren't ever afraid of anything," said Martin with some anxiety.

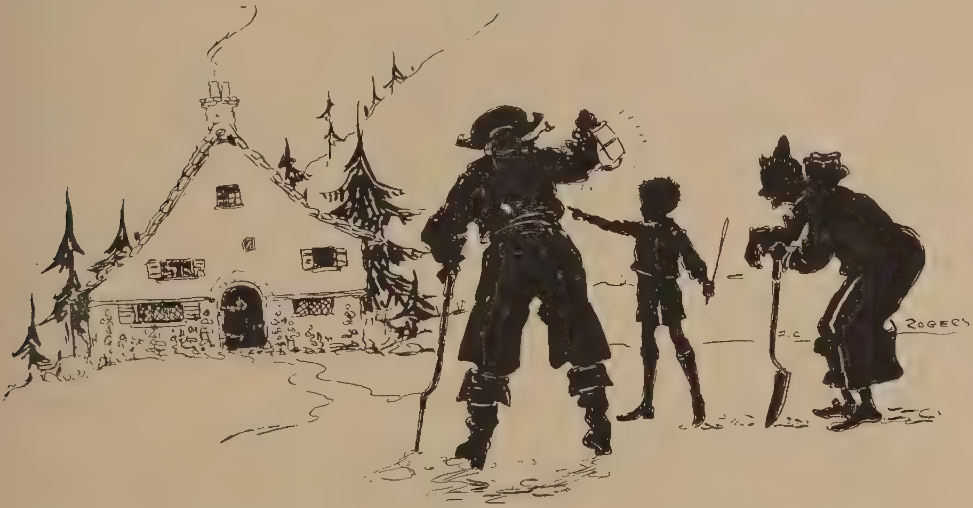


FIG. 160

The Clown's Cottage

The Little Lonely Light

As they got nearer to the light, he saw that it came from a tiny cottage with hollyhocks growing in the front garden.

" Who lives there ? " inquired Martin, pointing to the cottage.

" I do," replied the Clown.

" Oh, I *thought* you did," said Martin joyfully.

The Clown sighed, and for the first time that evening he looked sad. " But I wish I didn't," he said.

" Why not ? " Martin asked, surprised. It seemed such a very pretty cottage.

" You see," growled the Pirate, " the Clown would like to marry the Princess, and the Princess would like to marry the Clown——"

" But the Princess lives in a castle and I live in a cottage," said the Clown.

" *Why Did You Bring the Poker ?* "

" Tide's up, Martin," growled the Pirate. " And it's time you were home. Here's my boat. Jump in."

He stopped beside a little rowing boat on the shore. They all helped to push the boat into the water, the Pirate sprang in, and the Clown helped Martin to climb over the side.

Martin smiled up at the Clown, and suddenly the Clown's eyes began to twinkle again. " Martin, Martin," he grinned, " why did you bring the poker with you ? "

This time Martin forgot to pretend that he didn't hear, so he told him. " Because," said Martin, " I thought—a Clown has a poker, and a Clown isn't afraid. I—I wanted to not be afraid—like a Clown."

The grin faded from the Clown's face. He stared at Martin. "By jingo!" he cried. "It's because I haven't got a poker. I *ought* to have a poker. Martin, Martin, lend me yours!"

Martin held out the poker.

"I'll send it back to-morrow by Carter Paterson," said the Clown, as he grasped the poker. Then turning round he walked abruptly away from the shore, and began to climb the hill.

"Oh, dear!" said Martin. "Is he angry?"

"No," growled the Pirate. "He's as pleased as anything. He's gone to ask the Princess about living in that cottage. The poker you've lent him has given him the courage." This made Martin feel very proud and happy, for he had been able to help a real clown.

Martin Goes Home

The Pirate began to row away from the island, and Martin sat very still in the boat, watching the white gleam of the Clown's clothes as he moved in and out among the trees, until at last he disappeared from sight.

When they reached the mainland, the Pirate said "Good night" and left him.

Martin crept into the house and up to his bedroom. And nobody saw him. He went straight across to the window and looked out. All the little lights were twinkling at the top of the hill on the island, and at the bottom of the hill the one little light shone all alone.

"I'm glad I lent him the poker," said Martin to himself.

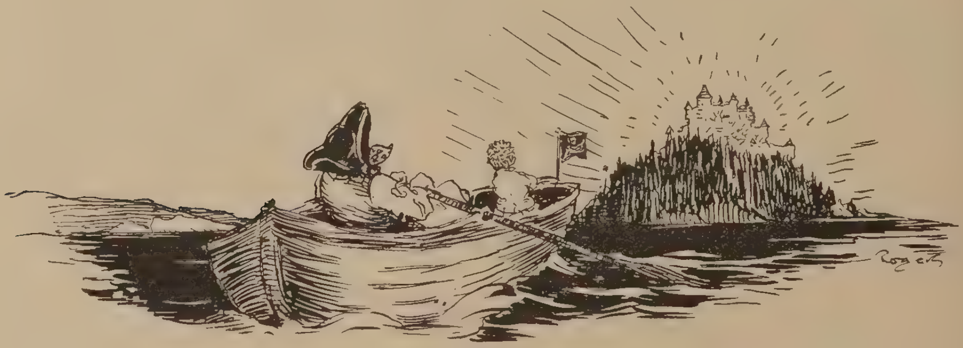


FIG. 161
The Pirate Rows Martin Home

THE LITTLE BROWN DOG

A Story for Every Day

Monday: A SHOCK FOR MISS PHOEBE
Tuesday: THOMAS AND JANE
Wednesday: MISS PHOEBE MAKES UP HER MIND
Thursday: THE LIGHTED MATCH
Friday: MISS PHOEBE CHANGES HER MIND

1. A SHOCK FOR MISS PHOEBE

MISS PHOEBE PENNINGTON and Miss Pansy Pennington were two wealthy old ladies who lived in a large red-brick house near a quiet country village in Kent. They were sisters, and Miss Phoebe, the elder of the two, was an invalid; that is to say, her legs were getting rather old and stiff, and she used to lie on a sofa most of the day and expected Miss Pansy to run about and wait on her.

She always called Miss Pansy, Emily, because she thought it suited her better, but Miss Pansy preferred her own name and wished her sister would call her by it. They had a maid they called Bertha—a big strong woman who had been with them for years; she did all the housework and the cooking. Her name wasn't really Bertha, it was Isobel; but Miss Phoebe insisted on calling her Bertha because she had once had another maid called Bertha. Isobel was very indignant at first that she wasn't called by her proper name, but she got used to it in time.

The Postman Brings a Letter

One morning the postman brought a letter to Miss Phoebe and Miss Pansy that upset them very much indeed. It was a letter from their brother in Australia, whose wife had died six years ago. He said his business compelled him to start on a tour round the world, so he was sending his two little children over to England for Miss Phoebe and Miss Pansy to take care of until his tour was over. "I know you will look

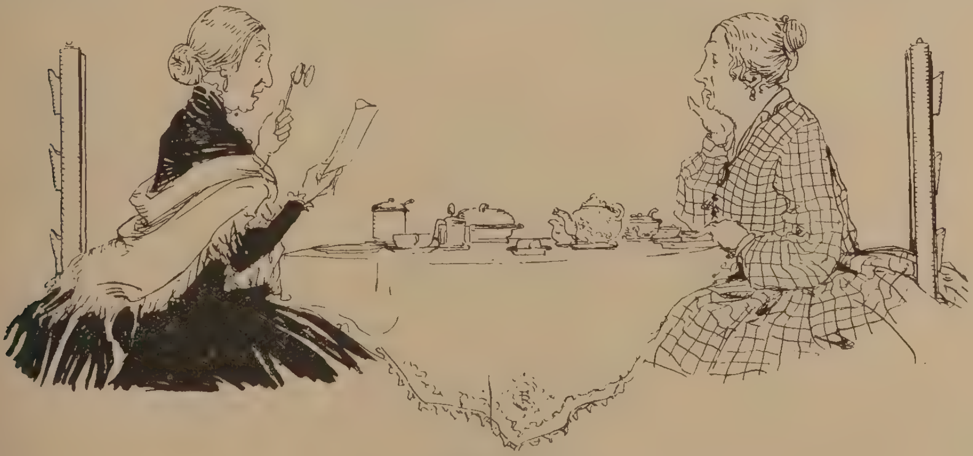


FIG. 162
The Aunts Receive a Letter

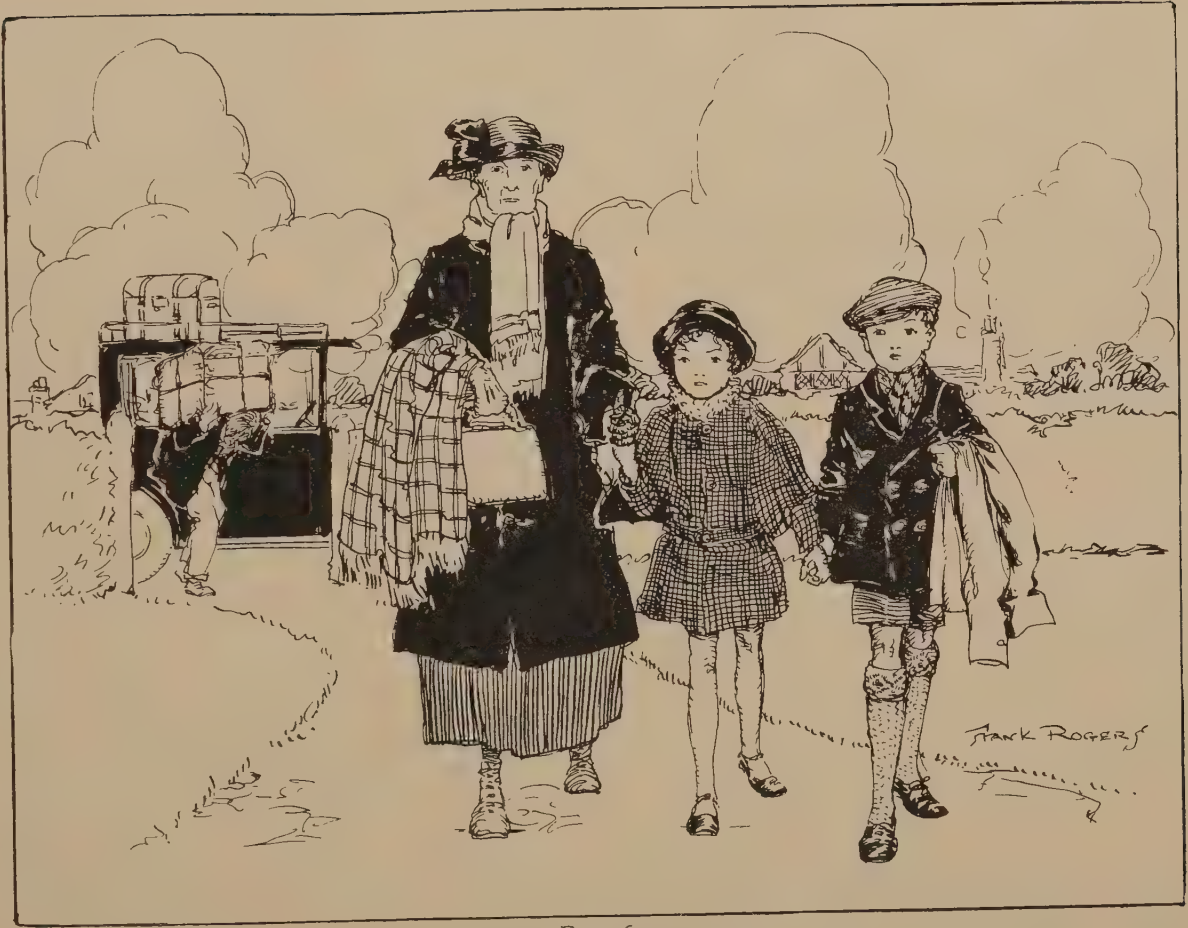

FRANK ROGERS

FIG. 163

Bertha Returns with the Children

after them for me," he wrote. "A friend of mine, who is coming over to England will see them safely into your hands. By the time you get this letter they will be well on their way." He added particulars as to the time and place of arrival.

Miss Phoebe and Miss Pansy had to read the letter over three times before they seemed able to take it in. At first they were speechless with amazement and concern, and then they were very annoyed. Two children running about all over the house, upsetting everything and making a terrible noise! *Their* house! What an idea! It was impossible. Miss Phoebe said she wouldn't have it.

"But we can't help having it," said Miss Pansy. "They are on their way here. We can't stop them."

"Oh, dear, I feel very upset, very upset indeed," wailed Miss Phoebe. "I know I shan't be able to eat anything at all to-day, because I'm so upset." She had just finished a very hearty breakfast, so Miss Pansy wasn't very worried about her at present.

All day long the two old sisters discussed the matter—disturbed, and anxious, and grumbling.

They told Bertha about it. "Humph!" was all Bertha said, but there was a gleam of amusement in her eyes.

Bertha Fetches the Children

It was arranged that Bertha should go up to London and meet the children at the station, and when at last the day of their coming arrived, Bertha put on her best black coat and her black hat with the little knot of cherry-coloured ribbon in it (that Miss Phoebe eyed with disfavour because she considered it unsuitable for a woman as old as Bertha), and went up to London.

Bertha returned, accompanied by two small children and two large boxes.

The boy was eight years old and his name was Justin. He had a brave, fearless way of holding up his head and looking you straight in the eyes, and he asked very sensible questions that made Miss Phoebe get all flustered.

The girl was seven, and her name was Gay. And very well it suited her, too. She was a gay, happy-go-lucky little girl, always ready to laugh, and she was pretty and dainty.

The two children had promised their father to be as good and as happy as they could while he was away, and when they arrived at their aunts' house they were most anxious to be friends with them both. But it was rather difficult being friends with Miss Phoebe.

Miss Phoebe's Greatest Dread

After the first greetings were over, Miss Phoebe lay in state on the sofa and gazed at the children with her small, faded-blue eyes.

"I hope," she said, "that you will be good children, and won't make a noise and bang doors, and won't tread on the garden-beds and bring mud into the house. And I trust that you won't play with matches and set the place on fire." For this was Miss Phoebe's greatest dread—fire.

"We'll try to be good, Aunt Phoebe!" said Justin and Gay, feeling all at once dispirited and home-sick. This was not a bit like the welcome they had imagined.

2. THOMAS AND JANE

THE first thing Miss Phoebe set about doing was to alter the children's names.

"Absurd names," she said irritably, as the two children and Miss Pansy sat at luncheon the next day. Miss Phoebe herself lay on her sofa as usual, and had her luncheon set on a small table beside her. "Justin and Gay! Whatever possessed your father to call you such names?"

"Mother chose them," said Justin in his clear, young voice.

"Oh, your mother!" said Miss Phoebe, giving a slight sniff. "I might have known." She did not notice the dangerous gleam that came into Justin's eyes.

"Well, anyway, we can't have such nonsensical names in this house," went on Miss Phoebe, suddenly getting cross. "Please remember that while you are under this roof you must have nice, sensible names. We shall call you—Thomas and—and Jane."

Changing their Names

She was amazed and startled at the sudden peal of laughter that came from Gay.

"What are you laughing at?" demanded Miss Phoebe, sternly.

"How shocking!" said Miss Pansy, who always backed up her sister.

Gay tried to straighten her face. "Oh, I'm so sorry, Aunt Phoebe," she said, "but it sounded so funny."

"What did?" said Miss Phoebe.

"Why, that you should want to change our names, of course," Gay explained pleasantly.

"Because, of course, you can't change them, can you?" joined in Justin. "Thomas and Jane are nice names, but *our* real names are Justin and Gay."

"That may be," said Miss Phoebe. "But what's to prevent me *calling* you Thomas and Jane? Eh?"

"Why—*we* shall prevent you," said Justin, promptly but quite politely. "We shan't answer to them."

Miss Phoebe was astounded. She gave a slight gasp, and waved her hand helplessly towards her sister. "Emily," she whispered—she always called her sister Emily—"my smelling salts!" As always, when she did not get her own way at once, Miss Phoebe became ill.

Miss Phoebe is Very Upset

In a moment Miss Pansy was fussing round her sister's sofa—fanning her with a newspaper, holding smelling-salts to her nose—while the two children gazed in wonder.

"There! You've upset her now," said Miss Pansy. "She'll be upset for the rest of the day, I expect. You'd better both go outside——"

The children rose obediently and were moving towards the door when Miss Phoebe suddenly sat up, knocking the bottle of smelling-salts out of Miss Pansy's hand.

"No," cried Miss Phoebe, in a vigorous and determined voice. "You are to stay here. Sit down again, *Thomas*. Sit down again, *Jane*." She pointed to their chairs with a quivering finger.

Justin looked at Gay; then together and very quietly, the two of them turned and walked out of the room, and closed the door gently behind them.

A Council of War

Gravely the two children walked into the garden and held a council of war, while Miss Phoebe collapsed on the sofa again and Miss Pansy fanned her helplessly with the newspaper.

Happy-go-lucky Gay was inclined to make peace at any cost. "What does it matter what she calls us?" she said. "We can still call each other by our real names, Justin."

"No," said Justin. "It's not fair. Aunt Phoebe has no right to alter our names. Mother and father liked our names and they mustn't be altered." "But we mustn't be rude to Aunt Phoebe," said Gay.

"No," agreed Justin. "I tell you what, Gay—if Aunt Phoebe speaks to us and doesn't call us any names at all, we must answer at once—but if she calls us Thomas and Jane we really needn't answer, because we aren't Thomas and Jane, you see."

They kept to this plan, much to Miss Phoebe's surprise and annoyance. She would not give in, and neither would they.

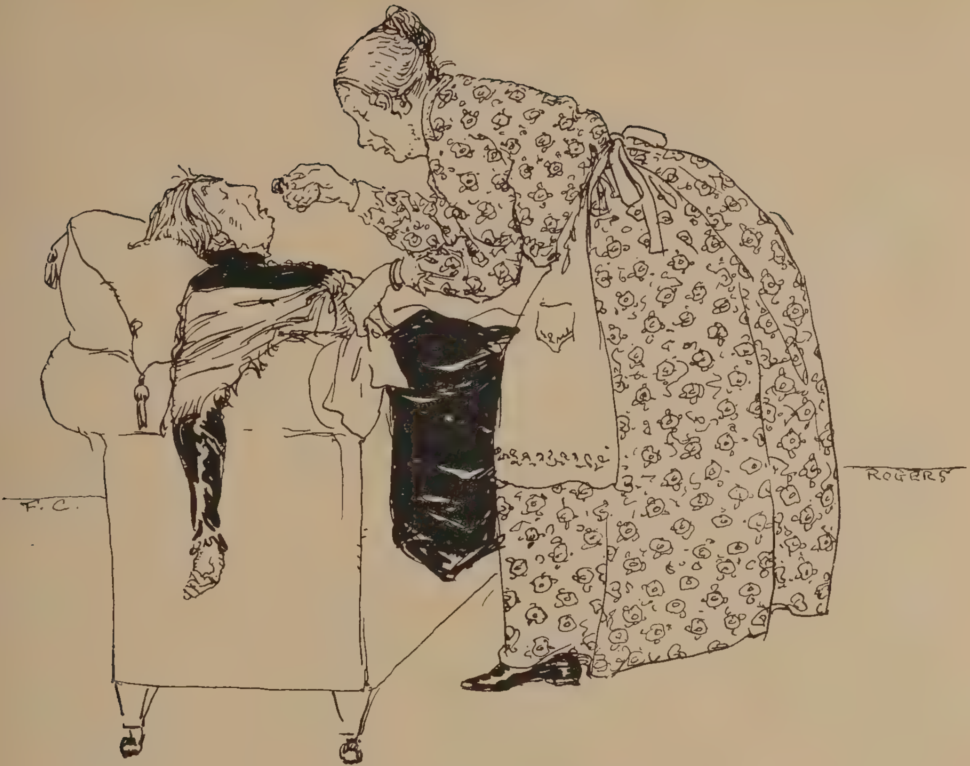


FIG. 164
Miss Phoebe is Very Upset

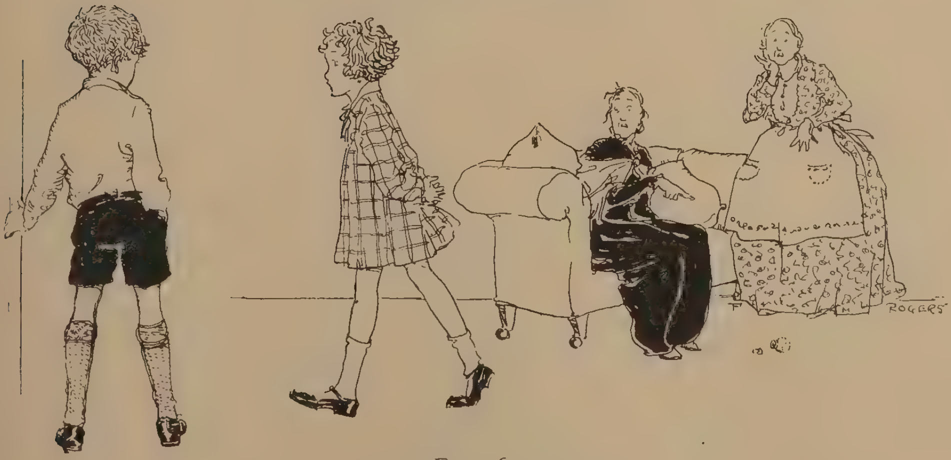


FIG. 165
They Walked out of the Room

3. MISS PHOEBE MAKES UP HER MIND

IT was arranged that the children should go to a small school in the village each morning. They liked the school and liked their teachers and enjoyed being with the other children. But when school was over and they returned to the big, red-brick house and the stiff neat garden, with the high thick hedge all round it, they felt as if they were coming back into a prison.

If only Miss Phoebe hadn't been so cross and naggling with them, and Miss Pansy so shocked at everything they did, Justin and Gay would have settled down fairly happily to await their father's return; though, of course, they missed him dreadfully.

They found an unexpected friend in Bertha. Glum and silent as she usually was, yet she was very fond of children; and the fact that Miss Phoebe had insisted on calling her Bertha instead of her real name, made a bond of sympathy between the elderly maid-servant and Justin and Gay.

They Find a Little Dog

One cold, wet day, coming home from school, the children found a little lost brown Irish terrier dog. He had no collar on, and he was tired and lame; he looked up at them pleadingly. Tears sprang to Gay's eyes as Justin patted the dog gently, and the dog leant his head wearily against Justin's knees.

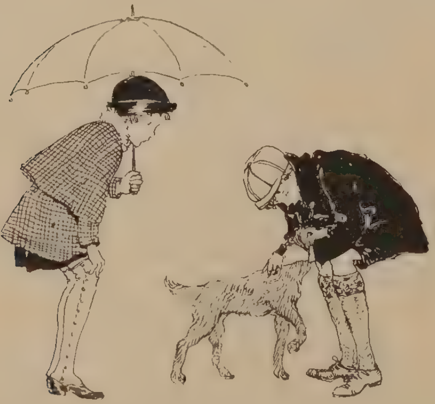


FIG. 166

They Find a Little Dog

"Oh, what can we do?" said Gay. "We can't leave it here."

"We'd better ask at some of these houses if anyone has lost a dog," said Justin.

They inquired at a number of houses, but nobody had lost a brown Irish terrier dog.

"If only Aunt Phoebe would let us take him in till we find his home——" began Justin.

"Let's take it home anyway," said Gay, "and ask Bertha to give it some food. We can't leave it here."

Very slowly the two children walked home, and the little brown dog limped beside them.

Bertha was very sympathetic. She gave the dog a good meal and some water, and let it have a good sleep on the rug before the fire. But she shook her head when Miss Phoebe's name was mentioned. The children were very anxious all the afternoon in case Miss Pansy should put her head round the kitchen door and see the dog before they had had a chance to tell Miss Phoebe about it; but Miss Pansy didn't come, and as soon as the dog woke up, Justin and Gay took it along to the drawing-room, where Miss Phoebe was lying resting on the sofa, as usual.

Miss Phoebe is Introduced to the Dog

"Aunt Phoebe," began Justin, edging round the door, "look what we found this morning, coming home from school!"

"Eh?" said Miss Phoebe, raising her head from the cushion. "What's that?"

Gay led the dog into the room.

Miss Phoebe gave a scream, and started up. "A dog!" she cried. "Take it out at once. How dare you bring a dirty, muddy dog into my house!"

"But Aunt Phoebe—he's lost," said Justin earnestly.

"What's that to do with me?" said Miss Phoebe. "Take it out this instant!"

"But he's nowhere to go," said Gay. "Where can we take him to?"

"The police station, of course," said Miss Phoebe.

" The police station ! " echoed Justin and Gay in dismay.

" Oh, Aunt Phoebe, please, couldn't we keep him just for a day—to try to find his home ? " implored Gay. " Do, *do*, say we can——"

" Certainly not," Aunt Phoebe glared at the dog. " Take it away at once. Do you hear me ? At once, I say."

" I wish my father were here," said Justin desperately. " He'd let us keep him."

" Well, I'm very glad your father is not here," said Miss Phoebe. " If you don't take the dog away this very minute, I shall call the gardener in to put it out . . . Emily ! Emily ! My smelling-salts ! . . . I don't know when I have felt so upset ! "

Five minutes later a sorry little procession went out of the gate and turned down the lane towards the village police station—a little girl, and a little boy, and a muddy brown dog ; and behind them marched Bertha, under orders to see that they really did go to the police station.

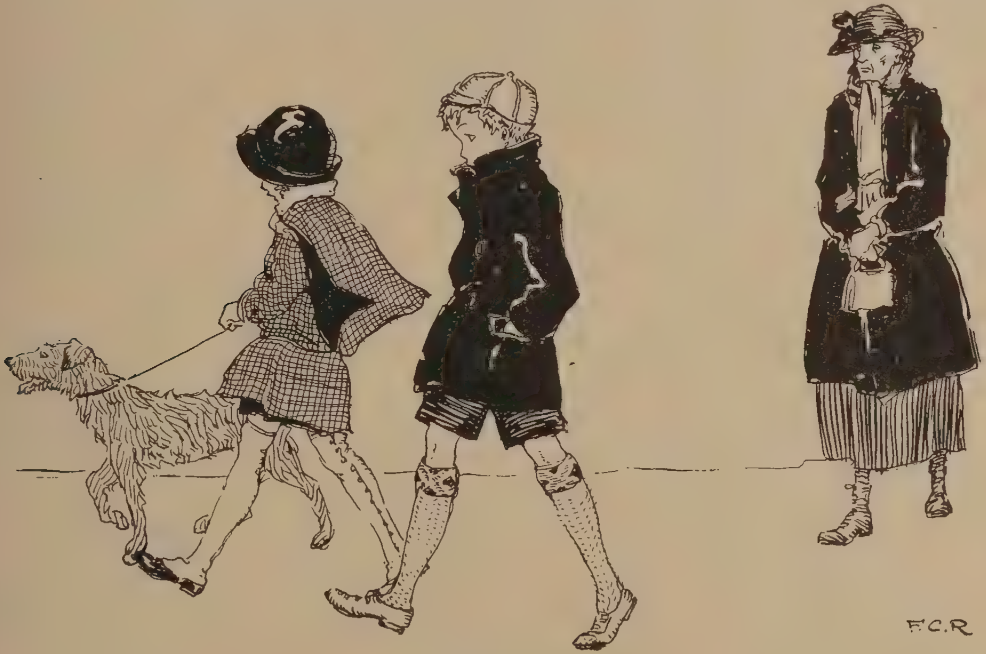


FIG. 167
Taking the Dog to the Police Station

4. THE LIGHTED MATCH

THEY had only gone a little way when Bertha said, " I have got an idea. We'll report the dog at the police station—but we won't leave him there. I'll tell the police I've got some friends who'll take him in for a few days."

The children were delighted at this and, after they had called on Bertha's friends, they went to the police station and gave particulars about the dog, and then they all went back to Bertha's friends again, a Mr. and Mrs. Hammond, who kept the grocer's shop in the village. Mr. and Mrs. Hammond were kind, sympathetic people, and promised willingly to look after the dog for a day or two.

Justin and Gay said good-night to Terry, as they had called the dog, and promised to come and see him in the morning on their way home from school. Terry seemed very unwilling to part from them, and tried to follow them when they went away; and they could hear him giving little short barks and whines as they went up the street.

Terry Comes Back

And just as they were going to bed that same evening, they found Terry outside on Miss Phoebe's doorstep. He had got out from the Hammonds' and followed them. He made such a fuss of Gay when she went down on her knees and flung her arms round his neck.

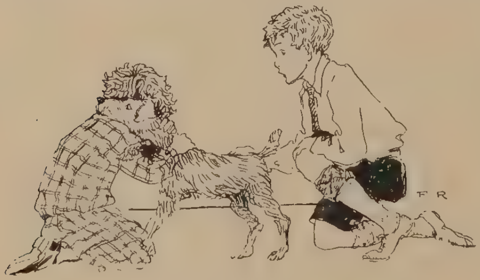


FIG. 168

Terry Comes Back

" Oh, Justin," said Gay. " He does *belong* to us, doesn't he ? I can feel he does."

" So can I," said Justin. " It is a shame . . . I do wish father was here. *He'd* let us keep Terry."

But at that moment Miss Phoebe called out to know what all the noise was about, and they had to tell her and give Terry up to Bertha to take back to Mr. and Mrs. Hammond.

After this, Justin and Gay used to call in to see Terry every day on their way home from school. Nobody claimed him. Terry was very intelligent and seemed to understand every word the children said to him. He grew to understand that if ever he came near Miss Phoebe's house he mustn't be seen, and must on no account bark.

Although the children didn't know it, Terry often came along when Mr. Hammond let him out for a run of an evening, and got through a hole in Miss Phoebe's hedge and wandered round the garden while everybody in the house was asleep. He seemed to know that he wouldn't see the children, but he liked to be near them. He would trot up and down for a few minutes, and then go back home to the Hammonds'.

Terry Gives the Alarm

One night when he had come along like this, and was wandering round the dark, silent house inside which Justin and Gay were sleeping, he came to the little shed near the back door where the gardener kept his tools. Now earlier in the day, while putting his spade and fork away, the gardener had lit his pipe and thrown the lighted match down on the ground. He had not noticed the bundle of newspapers in the corner of the shed, and had locked the door and gone home. The fire that he had started had smouldered and smouldered, and now, as Terry was passing the shed, he saw a coil of smoke coming from the side of the door.

Terry stopped and stared; then raised his nose in the air and sniffed. Something was wrong. He felt sure of that.

And even as he stood there sniffing, there was a crackling sound, and a long streak of flame leapt through the tiny shed window.

Terry forgot all about his instructions never

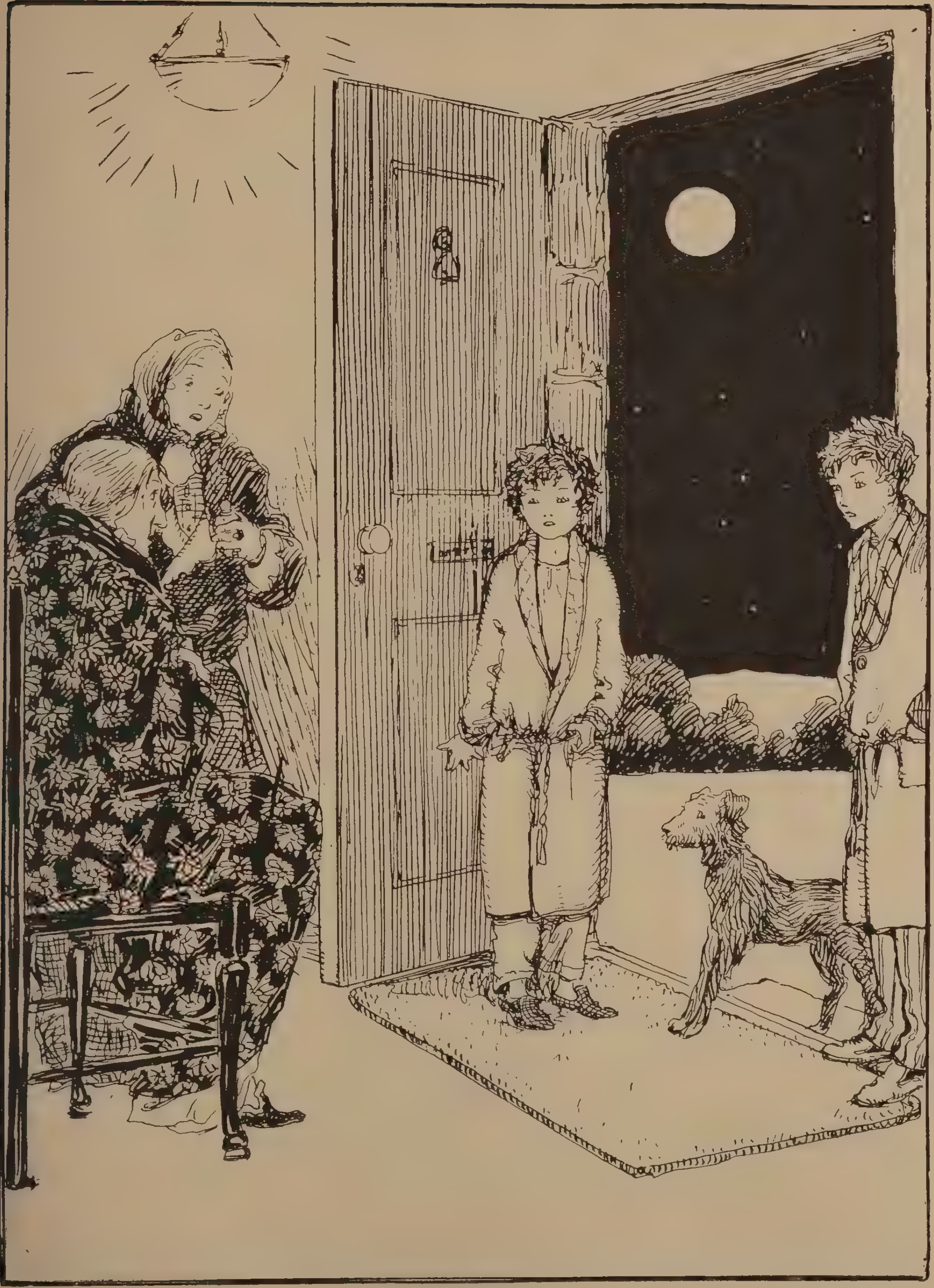


Fig. 169

The Aunts send Terry Away

to bark in Miss Phoebe's garden. He forgot everything, except that here was an enemy—here was danger—and he must tell Justin and Gay about it at once. He began to bark. It was a sharp, excited bark, a warning bark, and as he barked he ran backwards and forwards from the shed to the front door.

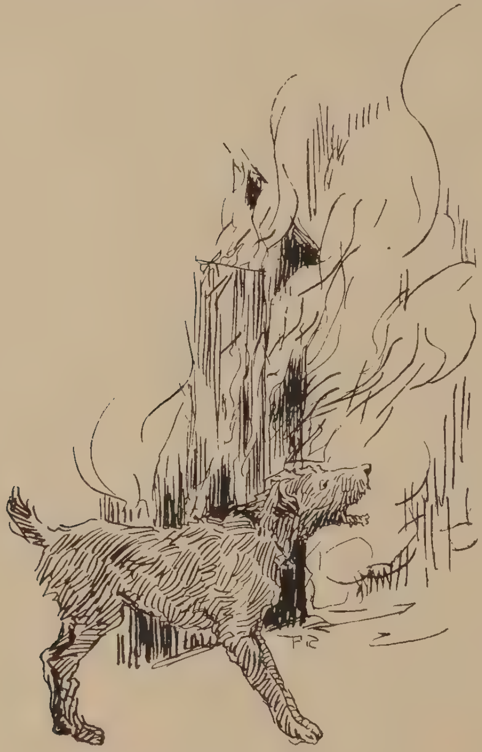


FIG. 170

Terry gives the Alarm

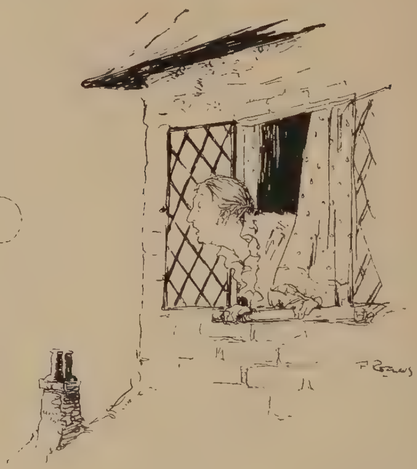


FIG. 171

Miss Pansy Looks out of the Window

Miss Phoebe heard him first. Miss Phoebe, with her dread of fire, would undoubtedly have smelt the shed burning earlier, had she not happened to have a bad cold in the head at this time. Hearing Terry barking, Miss Phoebe sat up in bed.

"That dog again!" she said angrily to herself. "To-morrow I shall get Emily to wheel me out in my Bath chair, and I will take him to the police station myself."

5. MISS PHOEBE CHANGES HER MIND

TERRY continued to bark, and within a few minutes he had roused the household. Miss Pansy put her head out of the window and saw the shed, which now had flames darting out from it on all sides. She gave a piercing scream which caused Miss Phoebe to get up and come tottering out on the landing, gasping and terrified. Justin and Gay came running out of their rooms and started off down the stairs. They had recognized Terry's frantic bark, and could smell the burning wood. But Bertha was before them. By the time the children arrived, she had got the garden hose fixed, and was beginning to pour water on the fire.

Some trellis-work beside the shed had caught fire by now, and the flames had reached the back door, where they were licking up the paint.

The nearest house was a little way down the lane, and Bertha shouted to Justin and Gay to put their coats round them and run there quickly and fetch help. The two children ran off, followed, of course, by Terry, mad with joy to see them.

The Children Fetch Help

It was rather exciting going along the country lane by themselves at night. They were not in the least frightened—they hadn't time to be.

The people from the next house, as soon as they understood what had happened, telephoned for the fire engine, and then came back with Justin and Gay. They found the fire still raging fiercely, in spite of Bertha's untiring efforts with the hose. Miss Phoebe and Miss Pansy were standing in their dressing-gowns, shivering and wringing their hands, and looking helplessly on.

The neighbours set to, taking a turn with the hose, and throwing buckets full of water over the flames ; and by the time the fire engine came dashing up, the worst was over. The firemen soon finished the job.

But afterwards, when Miss Phoebe and Miss Pansy saw the wrecked shed, the burnt trellis-work, and the scorched and blackened back door, they realized what a narrow escape the house itself had had.

Such a Crowd

It seemed to Justin and Gay as if half the village had wakened up and come running to stand outside the garden gate, and in the garden, to watch the firemen at work.

Terry was quiet now, and kept close to the heels of Justin and Gay all the time. Wherever they went, he went too. The children heard people in the crowd pointing Terry out and saying to each other, " There he is ! That's the dog that gave the alarm ! Fine little fellow ! I wouldn't mind a dog like that myself ! " And they felt very proud of Terry.

Miss Phoebe heard these remarks, too.

At last it was all over. The fire was out, the fire engine had departed, and the villagers had straggled away. The neighbours who had been the first to come and help shook hands with Miss Phoebe and Miss Pansy, and congratulated them on the fact that their house had been spared, and also on the fact that they'd got such a splendid little dog.

" He's got courage," one of the neighbours added. " Some dogs would have simply run away from fire. He must be a fine house-dog. You won't have to worry about fires and burglars while you've got him."

Justin and Gay waited for Miss Phoebe to say, " He's not our dog at all." But Miss Phoebe didn't say anything.

When the neighbours had gone, Miss Phoebe and Miss Pansy sank down into chairs in the hall and looked at Bertha who was sitting, tired and exhausted, at the foot of the stairs. They told Bertha how grateful they were to her.

Miss Phoebe Says " Thank you "

" You were very good, Bertha," said Miss Phoebe. " I feel very upset by it all. Get my smelling-salts, Emily."

By the open front door stood Justin and Gay, patting Terry who stood outside on the step

" It isn't me you ought to thank, Miss Phoebe, so much as that dog," said Bertha. " If he hadn't given us the warning—goodness knows what would have happened."

The children looked up anxiously at Miss Phoebe who was sitting very dignified in a hard stiff chair, clutching her thick dressing-gown around her. She looked strangely altered. She seemed to have an almost kind and gentle expression on her face.

Miss Phoebe looked down at Terry. " Yes," she said slowly, " he was a good dog. He has saved my house. You can bring him in . . . He is yours—*Justin* and *Gay*."

" Oh, Aunt Phoebe, *darling* ! " the two children cried, flinging themselves upon her.

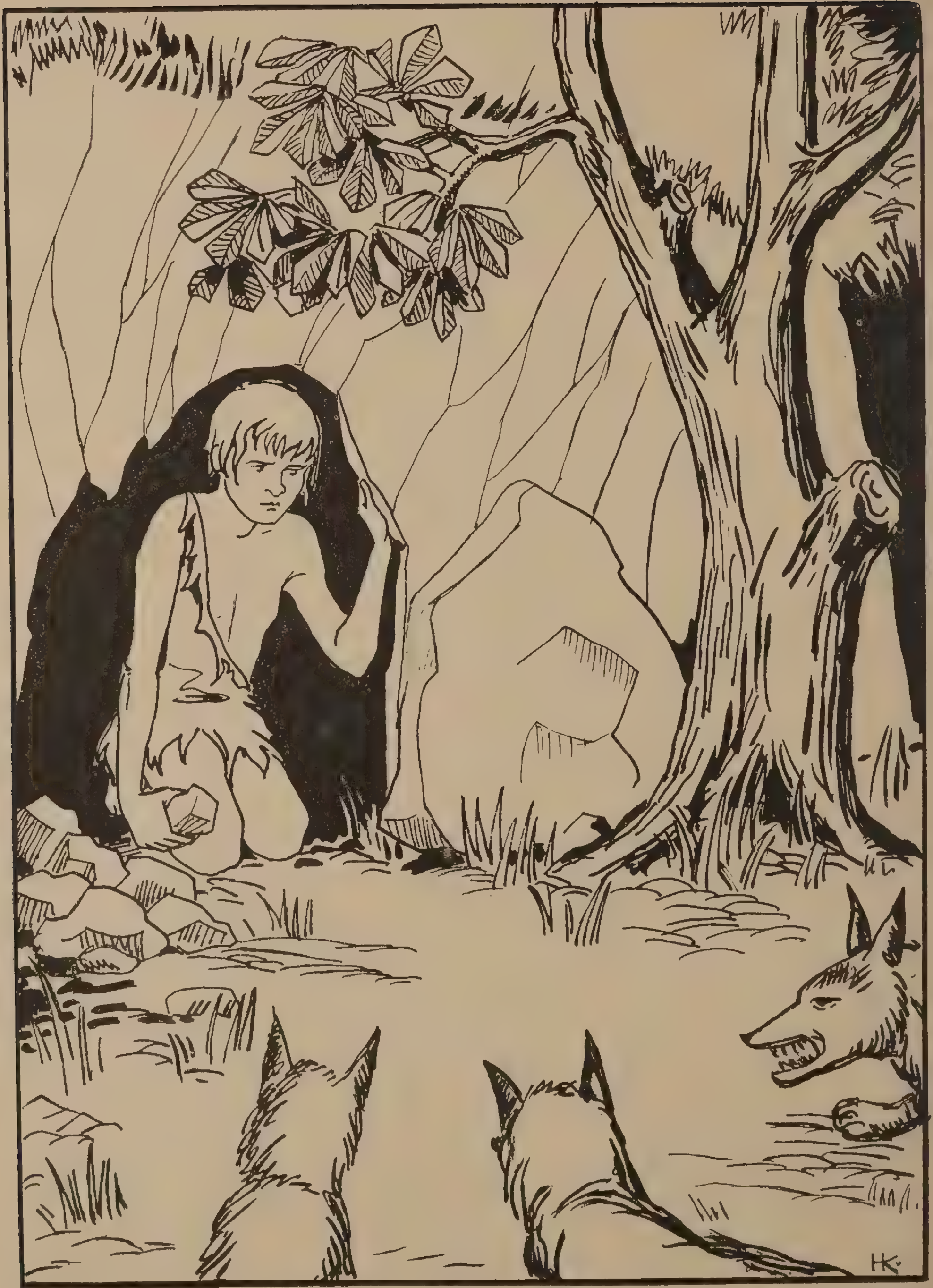


FIG. 1.
Wookey the Cave Dweller

STORIES FROM HISTORY

STORIES ABOUT PRIMITIVE TIMES

1. THE STORY OF WOOKEY, THE CAVE-DWELLER
2. THE STORY OF STONE-WORKER AND QUICK-STITCHER, THE STONE AGE CHILDREN
3. THE STONE AGE FAMILY THAT USED FIRE
4. ANOTHER STONE AGE FAMILY AND WHAT THEY LEARNT
5. THE STORY OF SMITH, WHO LIVED IN THE BRONZE AGE
6. SOME PEOPLE WHO LIVED IN THE IRON AGE

1. THE STORY OF WOOKEY, THE CAVE-DWELLER

A LONG, long time ago, there lived a boy called Wookey. He was rather rough looking, with long, shaggy hair. Probably the only clothing he had was the skin of an animal. He lived thousands and thousands of years ago, so long ago that we know very little about him or the people who lived at that time. They lived in caves and were called cave-dwellers.

In those days there were no houses or shops or churches. There were no schools, nor were there any books, because nobody had learnt to read, or write, or do hard sums. There were no carriages, or trains, or motor-cars. The cave-dwellers had to walk from place to place. There were no perambulators, and the mothers had to carry their babies till they were able to walk. There were no pots and pans, no cups and saucers, no cloth, no gas, no electric light, or candles, or matches, and no warm fires to cook the food.

Things Wookey Knew

Wookey knew nothing about these things. They did not exist. They had not yet been invented. But all around was the wonderful earth, the sea, and the rivers, the hills and rocks and stones. There were forests with tall trees, and in the forests lived many strange and terrible beasts. There was the mammoth, larger than the biggest elephant. There were the reindeer, the woolly rhinoceros, the cave bear, the laughing hyena, and the wild horse. There were the howling wolves that went about in packs, and then there was the sabre-toothed tiger, a very evil-looking beast. Wookey and the cave-dwellers were frightened of the wild animals.

Sometimes there were storms and floods and tempests. It was hard work for Wookey to keep himself alive. To live, he needed food and shelter, and to protect himself from the wild animals.

Where He Lived

He found a limestone cave, near a stream, where he could sleep and shelter from the storms and winds, and where he felt safe from the huge and dangerous beasts that prowled around. He chose a cave near a stream, because he must have water to drink. He could not live without water. It was as necessary to him as food.

When Wookey was hungry, he had to go out to find his food. He would often have to wander from place to place. Sometimes he ate fruit and nuts, which he found growing on the trees and bushes. Sometimes he caught fish in the river. He also ate roots. He used to dig the roots up out of the ground with his fingers. The ground was rather hard sometimes, so he thought of using a stick. He would pick up a jagged piece of rock or stone and hack off the branches of the trees. Sometimes he used a sharp stone. These were Wookey's first tools. (*See* page 183.)

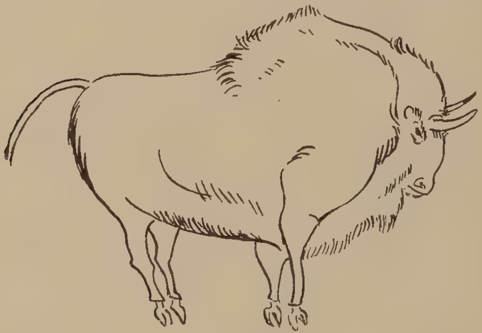


FIG. 2

From a Painting of a Bison, done by Cave-dwellers on the Walls of a Cave in Spain

How He Hunted

Wookey also went out hunting. He wanted meat to eat, and he used the animal's skin for clothing. He would pick up large stones to throw at the animals. He sometimes carried a stout branch, which he had hacked off a tree, for a club. Often he had to wander from place to place in search of his prey. It was dangerous to go out hunting; if Wookey hit an animal and failed to kill it, the animal might turn on Wookey and kill him instead!

Wookey would strike a flake from a piece of flint and use this to cut his meat. This was his first knife. He used to eat his food raw, so he had to tear, or bite very hard, with his teeth. That made his teeth very strong.

When Wookey had been out hunting and had had sufficient food to eat, he would sit and rest in his cave.

The First Pictures

One day he thought he would like to draw some of the animals he hunted for food, the horse, the reindeer, and bison. Wookey had no pencil or paper, so he picked up a sharp stone and scratched pictures on the walls of his cave. Sometimes the cave-dwellers have drawn pictures on stones. These pictures, scratched on stones and the walls of caves and on bones, were the beginnings of reading and writing and art. (*See* Fig. 2.)

Wookey and the cave men had to work very hard. They had many difficulties and fears, and it was often a hard struggle for them to live. They learnt a great deal when they first thought of using sticks and stones for tools and weapons. People have learnt to improve these, but the cave-dwellers had the idea of using them. They were the inventors.

Because stone was largely used for tools and weapons, we call this time in history the Stone Age.

Handwork. This story should give the children some idea of the beginnings of homes, food, art, and reading and writing.

1. Let the children draw pictures of their own homes, by way of contrast to Wookey's home.

2. Let the children make a co-operative model, in the large sand tray, of Wookey's home with its surroundings. Each child should be given something to do. The cave should be built up from large stones. An animal may be scratched on some stones.

With the help of the teacher, the scene should be built up in the sand tray. It should be made as realistic as possible, with hills in the sand and dried moss for grass, and a groove for the stream, and small pebbles for Wookey to throw at animals. The children should be given opportunity to play with the sand tray and reconstruct Wookey's various activities. (Fig. 1.)

2. THE STORY OF STONE-WORKER AND QUICK-STITCHER, THE STONE AGE CHILDREN

STONE-WORKER and Quick-Stitcher were a little boy and girl who lived in the Stone Age. For many years their shelter was a cave. Then their father built a new home, out on the open ground, where many other people camped. Their new home was a hut; it was round and made of bent sticks, covered with the skins of animals. (Fig. 3 *b.*)

The father and mother had to work very hard so that they and their children might live. The father used to go out hunting. He also made his own tools and weapons, and these were mostly made of stone.

Instead of picking up any rough stone or rock and using it, just at it was, like Wookey did, he used to sharpen and grind and polish the stones to make them serve his purpose. He was learning to improve his tools, though it took a long time, and he taught Stone-Worker all that he knew. He made a round smooth stone called a hammer-stone, which he used to chip flakes off the flint. He made arrow-heads and spear-heads and axes. He had a small piece of stone sharpened to a point, which he used for boring holes. This was his awl or drill. (*See* Fig. 36, page 183.)

Stone-Worker Learns to Make Tools

Stone-worker used to watch his father make tools and weapons. Sometimes he helped. He liked to grind and polish the stone implements. He used a slab of granite, or other suitable rock, for a grindstone, and a piece of animal's skin to polish the stone.

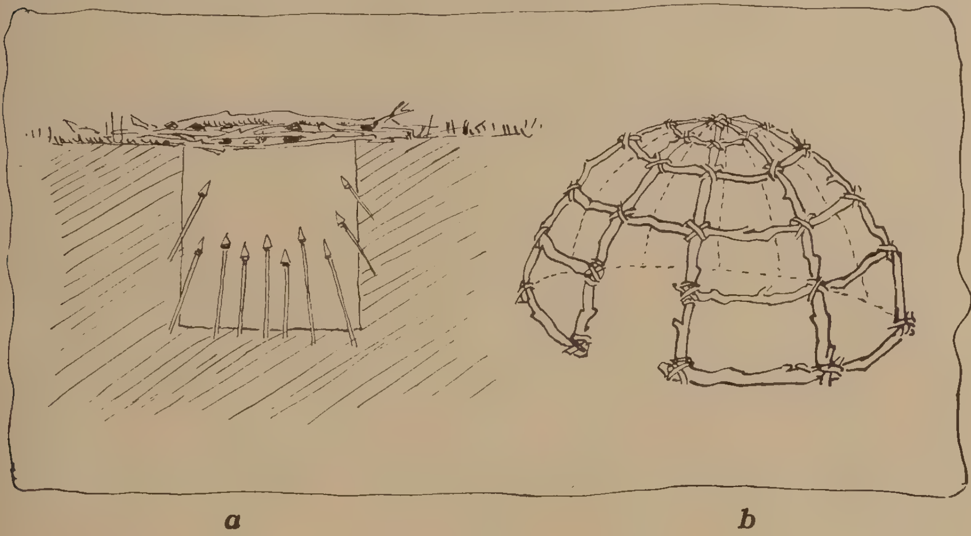


FIG. 3

(*a*) *Section of Animal Pit-snare.* (*b*) *Skeleton of Skin-covered Hut*

Stone-Worker thought it was a very wonderful invention when his father thought of putting handles on the stone knives and axe heads. It was a great improvement.

The Stone Age men needed weapons when they went out hunting. It was necessary for them to conquer the wild animals, and they also needed the meat for their families to eat. The skins were useful, too.

Sometimes they laid traps for animals. One day Stone-Worker watched his father and other men of the camp prepare a trap. They dug a pit (Fig. 3 *a*) and in it they put some stakes of sharpened wood, with the points sticking out. Then they put branches and moss and tufts of grass over the hole to hide it. Stone-Worker and Quick-Stitcher climbed up into a tree, in the distance, to see what would happen. They were very excited and a little frightened. They kept still and quiet. Presently an animal came walking along, thinking the ground was firm all the way. Then—down !—into the pit it fell, and the sharp stakes killed it. Stone-Worker and Quick-Stitcher ran home to tell their father that there was an animal in the pitfall.

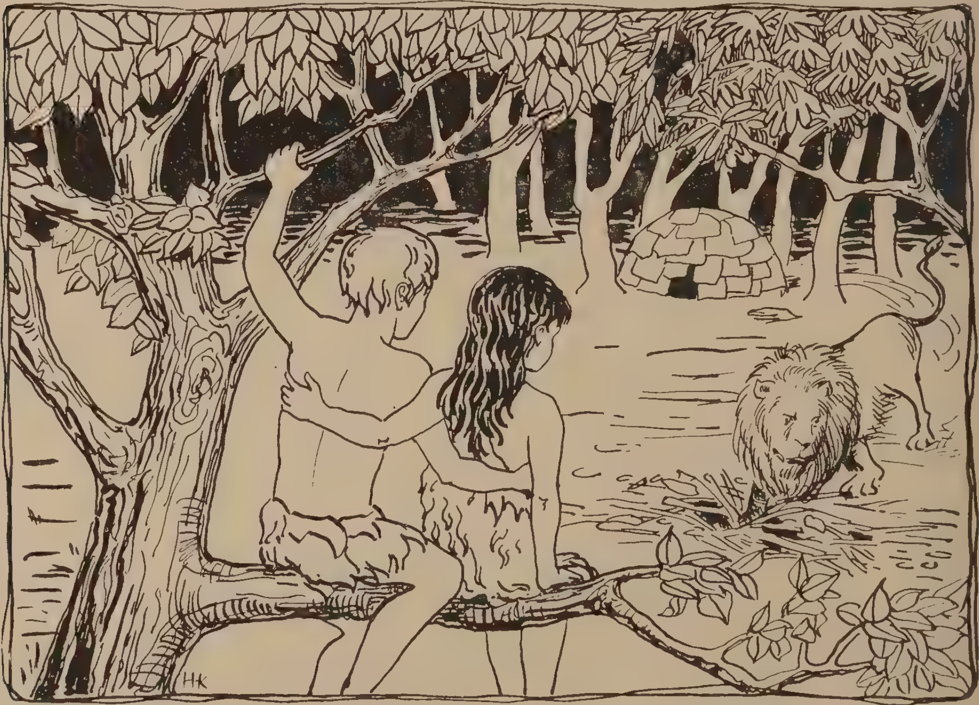


FIG. 4

Stone-Worker and Quick-Stitcher watch the Lion Fall into the Pit

Making Music

The father was glad. The animal was useful for so many things. The meat, the skin, the horns, the bones and the sinews were all used. The father used strips of hide for bow-strings. One day, when Stone-Worker and Quick-Stitcher were playing together near the camp, they found on old bow. They held it on one side and twanged the cord with their fingers. It made a sound, so they did it again and again. It was amusing to make these different sounds. It was like music. They enjoyed it, and so they kept the bow to play on ; it was their banjo.

What Quick-Stitcher Learnt

Quick-Stitcher helped her mother to prepare the skin of the animal. First they soaked the skin to soften it. Then they scraped off all the hair and bits of flesh with a stone skin-scraper. This was difficult to do. Quick-Stitcher did not like it very much, it was such hard work. She would rather play tunes on her bow ! The skin had to be soaked and stretched and dried until it was quite soft and pliable. Often they used oil or fat from the animal to soften the skin. Sometimes they stretched the skin on a frame made from branches, and sometimes they stretched it and pegged it on the ground to dry.

It took Quick-Stitcher and her mother several days to prepare the skin. It was very hard to make the leather soft and ready for use.

Quick-Stitcher wanted to make herself a dress from the skin, so her mother taught her to sew. First she had to make a needle. She cut a splinter from the horn of an animal, then she smoothed and shaved it down with a scraper and polished it with a piece of stone. Next she borrowed her father's flint borer, and made a hole for an eye. Her mother had a hollow bone which she used for a needlecase.

She Makes a Necklace

Quick-Stitcher made holes in the skin with the awl, then she sewed with her bone needle using sinews for thread, and in this way she made a rough tunic to wear. She was very proud of it, and wanted to make herself more beautiful still, so she made a necklace out of wolves' teeth. She bored holes in the teeth and threaded them on to a length of sinew.

The Stone Age people learnt to think and to make things. They had to work very hard, but the things which they thought of making, the people who lived after them learnt to improve.

Handwork. In this story the children should gain some idea of how men began to work. They built houses, they made tools and weapons, they learnt to master the animals and use them. They learnt to make leather and to sew. They had some idea of music. The teacher should show pictures of the home, the skin stretched for drying, the trap, and the tools, for the children to see as she tells the story.

1. Make plasticine models of spear-heads and arrow-heads, etc. (*See* Fig. 36 page 183.)

2. The teacher should suggest to the children that they should look about for sticks and stones, bring them to school, and make bows and arrows, spears, hammers, and axes such as Stone-Worker used.

3. Choose a couple of children to make the home. Willow or thin ash twigs are the best to use, as they are pliable. They should be stuck into a slab of clay, or plasticine, for the ground. Then covered with pieces of fur. Another child might cut out the shape of an animal's skin from an old wash-leather glove, and fasten it to four twigs—to represent the skin stretched to dry.

4. The rest of the class could draw pictures of—(*a*) Quick-Stitcher sewing, and their own mothers using a sewing machine. (*b*) Quick-Stitcher playing on a bow; and a piano, and a violin.

In a writing lesson, let the children write down all the parts of the animal that were used. The flesh for food. The skin for clothing and to cover the house. The bones for needles and needlecases. The sinews for thread. The teeth for necklaces. The horns for drinking cups.

3. THE STORY OF THE STONE AGE FAMILY THAT USED FIRE

LONG ago, in primitive times, there lived a father and mother. Their names were Fire-Maker and Cook. They lived with their children in a pit-dwelling.

Sabretooth and the mammoth, the woolly rhinoceros, and the other very large and fierce beasts were all dead, but there were still many wild animals that were dreaded by the people. Fire-Maker and Cook wanted a home where they and their children might feel safe from their foes.

They dug a big round pit in the ground and piled earth all round for walls. In the middle they put a roof-tree. The roof-tree supported the branches that rested on the bank to form the roof. They covered this with a rough thatch. On the ground of the pit they spread bracken and straw, to make it warmer and more comfortable to sit and lie on. This was their furniture.

There was a hole for a door, and they had to crawl in and out on all fours.

Making a Fire

One day, the father was sitting outside the pit-dwelling making a new arrow-head. He had a hard hammerstone in his hand. He was striking the flint with the hammerstone when suddenly sparks began to fly. He stared and rubbed his eyes with astonishment. What could have happened? He struck again and again. More sparks came. He called Cook and the children to look. Presently the sparks fell on some dry leaves and twigs, and they were blown into flame. The children were a little frightened. What could it be? Was it a fierce monster that was devouring the leaves and sticks? It was most mysterious. Fire-Maker did not know that he was making fire. They fed the fire with sticks and leaves. When they went near it, it was warm. They liked the warmth, so they kept the fire alight.

They were all hungry, so Cook brought some meat for them to eat. They sat round the fire to eat it. They ate their food raw. They had to tear the meat with their teeth. The roots they ate were often hard, but they all had very strong teeth. One of the children dropped a piece of meat into the fire. With much difficulty Fire-Maker was able to rake it out. The fire was so hot that by the time he got the meat out, it was hot too. When he tasted it, he found it was very good to eat. It was roast meat. So, after this, Cook always roasted the meat.

Cook Builds an Oven

Cook found other ways of cooking food. She learnt to bake. She dug another smaller pit outside the pit-dwelling. She lined it with stones and filled it with wood and made a fire. When the stones were red-hot, she raked the embers to one side, put the meat in and covered it over. In this way the meat was baked. This was her oven.

She also learnt to boil. She put the skin of a very large animal into the pit, then she put cold water into the skin and put the meat into the water. Near at hand was another pit, in which a fire was made. Stones were heated in the hot fire, and then rolled into the boiling pit. In this way the water was heated, and the food boiled. How the red-hot stones hissed in the cold water! A cover of woven twigs and grasses was put over the pit. Cook placed some roots and vegetables on the top, and they were cooked by steam. The children were glad that their mother had found out different ways of cooking food. It was softer and nicer to eat than raw food.

Fire-sticks and Lamp

Fire-Maker learnt other ways of making fire. He had two sticks, which he called his fire-sticks. One had a groove in it and the other stick fitted into the groove. Fire-Maker rubbed the sticks together very, very hard, for a long time, and at last heat and fire came. This was a very slow way. Another and easier way was to use a bow-drill. Fire-Maker took a piece of wood with a round hole in it, then he took a stick with a sharp point, and placed this in the

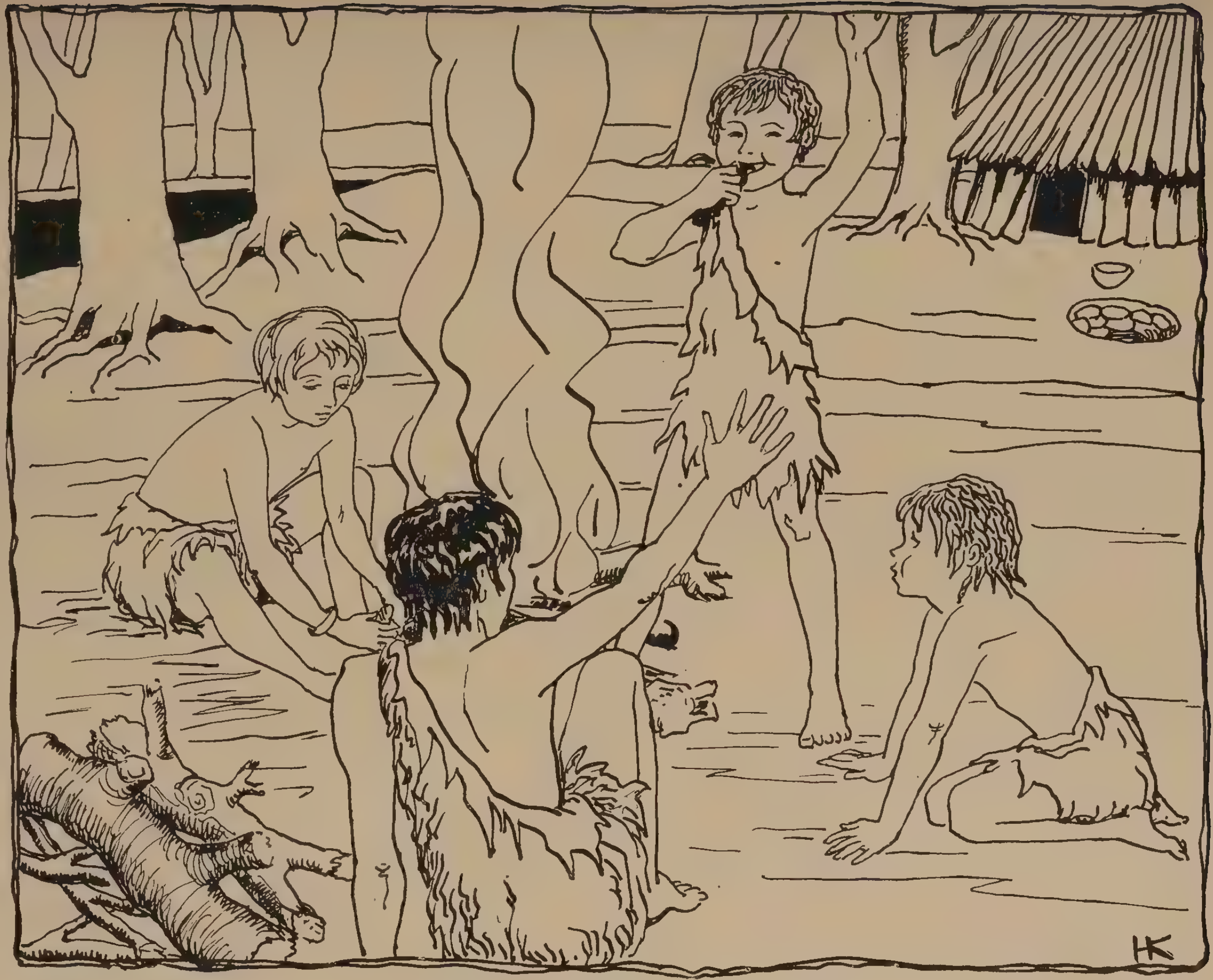


FIG. 5

The Boy who ate Roasted Meat for the First Time hole. The stick was held in place by the thong of the bow. The bow was moved quickly from side to side, and the stick twirled round and round, until at last sparks came from the friction and set fire to the dry leaves.

The people liked to gather round the fire at night; it was warm and gave them light, and it frightened away the wild animals. They tended the fire very carefully. They did not want it to go out; it was such a slow process to make a new fire.

When Cook was roasting the meat, she noticed that the fat burned with a flame. She thought how nice it would be if she could carry a flame into the pit-dwelling at night. It was so dark in the pit, that they always went to sleep when the sun went down. She scooped a hole in a lump of chalk and put in some fat and a piece of twisted grass for a wick. This was the first lamp. (Fig. 6.)

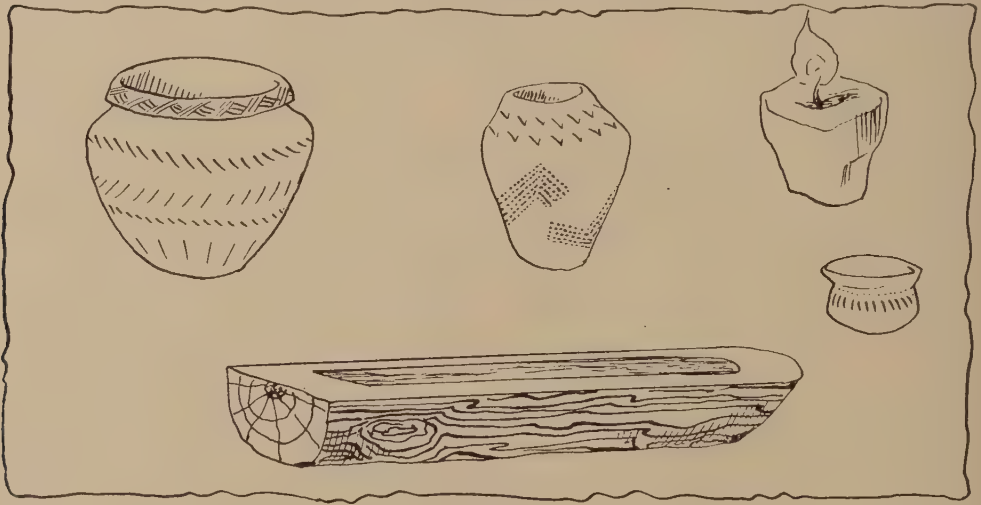


FIG. 6

Primitive Pottery, a Chalk Lamp, and a Dug-out Canoe

Other Discoveries

Cook made many discoveries. She found out which were the best berries and nuts for food. She gathered seeds from the corn and saved them to plant again. In the Springtime she made a hoe from a stone and stick and broke up some land and then planted the corn. When the corn was ripe, she cut it with a stone sickle. Her mill was two stones. One stone had a hollow, in this she put the corn, then the upper stone was pushed to and fro until the corn became flour.

Sometimes the children found out where the bees hid the honey, and they would bring some home. Cook mixed the honey with the flour, and then baked sweet biscuits.

When the fathers were away hunting, the mothers stayed at home and looked after the children and prepared the food. The primitive mothers worked very hard and made many discoveries.

Handwork. In this story the children should gain some idea of the methods of making fire and its use for cooking and lighting.

1. Let the children crayon a picture of a fire.
2. Suggest the various things for which we use fire to-day. Warmth. Light. Cooking. Hot baths. Boiling clothes on washing day. Horse-shoes. To make steam engines go. Baking cups and saucers. Baking bricks, etc., etc.
3. Let the children make a model of a pit-dwelling (Fig. 5) in the sand tray. Beside it make a cooking-pit.
4. Let the children model in clay or plasticine, (*a*) a lamp (Fig. 6), with a piece of string for a wick; (*b*) a scythe; (*c*) two stones to be the mill.

4. ANOTHER STONE AGE FAMILY AND WHAT THEY LEARNT

THOUSANDS of years ago, but a long time after Wookey, there lived a man called Herdsman, with Clay-Worker, his wife, and his little daughter, Weaver. Their home was a pit-dwelling in a village. There were about twenty-four huts in the village, perhaps more. The people in the village were friendly together and helped each other. Most of them were relations. They were called a tribe. The men of the tribe had built a wall all round the huts, so that no wild animals or unfriendly people could enter the village.

The people had learnt to work well with their stone-tools, and Herdsman set to work to build himself a new dwelling with improvements.

He dug a round hole about eleven feet across. He measured with his feet. His own foot was his foot-ruler. He built the walls of stones, and made them high enough for a man to stand upright, as the roof of the old pit-dwelling was too low. He put upright stones for the door jambs, and these were covered with a stone lintel. There was a central roof-tree, and the roof was thatched.

The First Indoor Fireplace

Clay Worker said she would like to be able to cook inside her home. It was often difficult outside; the rain put out the fire. On stormy days it took so long to cook their food, that Weaver would often cry for her dinner, because she was getting so hungry. So Herdsman put some flat stones inside the hut, for a hearth, and dug a little pit just beside it for a cooking hole.

On one side of the hut, Herdsman put a platform of stones. This was nearly a foot higher than the ground. It was covered with bracken and fur rugs, and here Herdsman and Clay-Worker and Weaver could sit and be very comfortable.

Herdsman often went away hunting. He had made friends with dogs. He had brought home some puppies, fed them, and been kind to them. The dogs lived with him, and went about with him, and helped him when he was hunting.

Domestic Animals are Tended

The people thought it might be a good plan to make friends with some of the other animals; so they did. Herdsman did, too, and he had oxen and goats and sheep and pigs. Having flocks and herds of his own was a great advantage. Herdsman now had no need to wander from place to place in search of food. He had animals at home, and they provided him with many of the necessities of life.

Herdsman had to take great care of his animals. He had to see that they had sufficient food, and he had to seek good pastures where they could feed. In the winter, Herdsman had to guard and protect his flocks. No matter how severe the winter, or scarce the food, he must feed the animals; otherwise they would die, and there would be no food or skins.

A man who had large flocks and herds was looked upon as rich. There was one man in the tribe who was called Lazybones. He did not like to work. He did not take proper care of his animals. He seldom bothered to seek good pastures for them to feed. The result was the animals died and Lazybones' poor little children were often hungry and cold. Lazybones was a poor man.

Herdsman had more animals than anyone else in the village; he was looked upon as a rich man, and was made the chieftain of the tribe.

Herdsman Makes a Boat

The village where Herdsman and Clay-Worker lived was near a river. Herdsman wanted to cross the river, but there was no bridge, and it was too deep for him to wade across. So he made a boat (Fig. 6). With his stone axe, he cut down a big log, and dug out the middle. He also used fire and burnt it out. When the boat was ready, he and Weaver went on the river. Weaver thought it was a wonderful

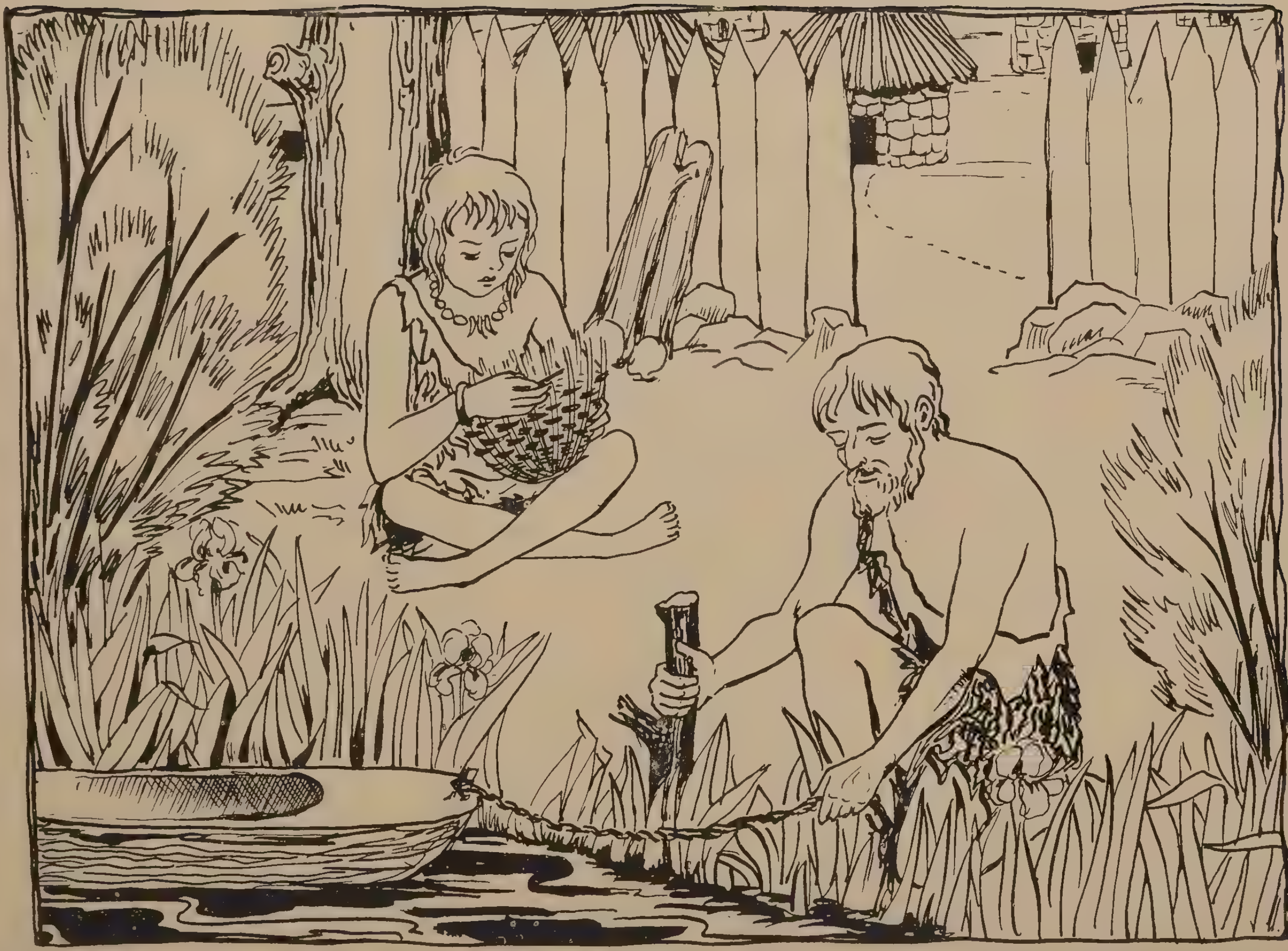


FIG. 7

Herdsman has Made a Dug-out Canoe

boat; it was called a dug-out canoe. Herdsman did not want the boat to float away when he was not using it, so he cut strips of hide, and twisted them to make a rope, and tied the canoe to a tree. (Fig. 7.)

He also learnt to twist sinews and the fibres of plants to make into ropes and cords.

Weaver has an Idea

Clay-Worker looked after the children and did the cooking and grew the corn. One day she sent Weaver to gather berries. Weaver took her drinking cup, which was an animal's horn. The bushes were thick with berries, and the horn was soon filled. Weaver looked about to see if there was anything else she could put them in. There was nothing. At last she thought of gathering the long reeds and grasses, and weaving them into a basket. She was very proud of her basket, and took it home to her mother. Clay-Worker thought it was a splendid idea, and made more baskets; but she made stronger ones of willow and osiers. The baskets were very useful to keep food in, but they would not hold milk or water.

Clay-Worker Makes Pots and Pans

Clay-Worker wanted something that would hold milk or water. So she lined the basket with clay and baked it in the fire. The basket burnt away, and Clay-Worker had her first pot, and the weave of the basket had left a pattern on the clay. After this, she made more basins and pots, and she found she could put food in the basins to be cooked. She made the pots of clay and very fine sand.

First she broke the clay into tiny pieces to get out all the tiny stones, then she dried it in the sun. After that she mixed it with water, so that it was easy to work; then she mixed it with sand, and kneaded it well. She made it into long rolls and then into pots. Weaver liked to make dents all the way round with her finger nails for decoration. Sometimes Clay-Worker made little lines with a sharp shell, for a pattern. The pots were put downwards on the ground. Weaver went to fetch brushwood to put all round. Clay-Worker went to get a torch and made a fire, and in this way baked her pot. When the fire was out she raked away the ashes, and when the pots were cool they were ready for use. (Fig. 6.)

The primitive women found out how to make baskets and pots. These are very useful to us to-day. The only tools the women had in those days were their own hands!

Handwork. In this story the children should gain some idea of people beginning to live in tribes in villages, and having possessions. They made improvements in building houses, and they made pots, baskets, and boats.

1. Make a co-operative model in the large sand tray, to give the idea of a village. Each child should make something. (*a*) Huts: lumps of plasticine can be used for the stones, and built up on a round piece of cardboard. The roof-tree can be seccotined on to the cardboard. (*See also Construction of Land and Sea Models*, page 739.) (*b*) Twigs can be sharpened for the stockade. (*c*) Animals can be cut from paper, or made in plasticine, to be Herdsman's cattle. (*d*) Dried moss can be used for grass, and evergreens for trees.

2. Let the children model pots in clay, and make patterns with their finger nails, or a pointed stick. (Fig. 6.)

3. Make canoes from corks, scooping out the inside, as Herdsman did with logs.

4. Let the children play at being Herdsman, and measure the room with their feet. They can be taught the standard foot measure.

5. THE STORY OF SMITH, WHO LIVED IN THE BRONZE AGE

A LONG, long time ago, after Herdsman and Clay-Worker had grown very old and died, there was a man called Smith. He lived in a round hut built of stones, rather like a beehive in shape. It had no windows, but it had a door.

Smith had a wife and several children. He made his own tools and weapons of stone, and he had a large herd of cattle. They grew their own corn. The wife looked after the children; she made the clothes and the pots and the baskets and did the cooking.

One day, while she was cooking, a piece of copper ore fell into the cooking pit. She did not know what it was, nor did Smith. She could not get it out, so she left it there until she had finished cooking and the fire had gone out. The copper ore had melted into the shape of a knife, and was now lying cold and hard at the bottom of the pit. Smith picked it up and felt its edge with his fingers. He had never had a knife like this before; its edge was keener and sharper than a stone knife, and was easier and quicker to make.

Smith Makes an Experiment

This really was worth finding; Smith decided to experiment with stones and fire. He got some lumps of copper ore from the boulders around, and sent the children to find tin in the gravel-beds of the neighbouring streams. He melted the tin and copper, and mixed them together, and had a metal called bronze.

Smith now became a very busy man. He made different shaped moulds from clay. He dug a pit in the dry ground, and filled it with charcoal and set it on fire, then he put on tin and copper and more charcoal, till there was a big heap above the ground. As the wind blew, the heat of the fire would rise, and the metal would melt and run into the pit below. The fire would be raked away and the bronze was found lying in the pit below. Smith next broke the bronze into lumps. He had to do this just before it became hard. Then he built a charcoal fire over a clay crucible, threw the pieces of bronze in, and as they melted they ran into the crucible and were poured into the moulds.

What He Made

Smith made knives, and spears, and swords and shields, and brooches and pins, all of bronze. He had several tools, a chisel, a socketed gouge, an anvil, a sandstone rubber, and a hammer. He found that by hammering the edge before it was cold it became thinner and keener and wider.

The bronze tools made a great difference to the people. With the bronze knives they could cut down larger clearings, and so had more space to grow corn and keep larger herds. The bronze scythes made harvesting easier. The men had bronze shields to protect them when fighting. The women liked to adorn themselves with the brooches and pins. All the people wanted things made from bronze.

Smith liked making them. He did it well, and taught his sons. They all became bronze-workers. They had no time to go out hunting, or to tend flocks and herds, or to grow corn. But they needed food and clothing. So the people who wanted any bronze work came to Smith's hut and bought it. Smith's hut became a bronze shop, but there was no money! The people paid in goods. They exchanged meat or corn or animal's skins for the bronze knives, and scythes, and brooches, and bracelets.

Traders Come to the Village

One day a party of men came to the village and asked to see the chief. These men were Traders, and they said that they would like to exchange their goods with the people. They went about from village to village, bartering their goods. They had tools and weapons, skins and cloth, salt, precious stones, and beads and necklaces.

Smith exchanged some of his bronze work for salt and precious stones, so the Traders now had bronze to barter.

Smith and his sons had to keep a very hot

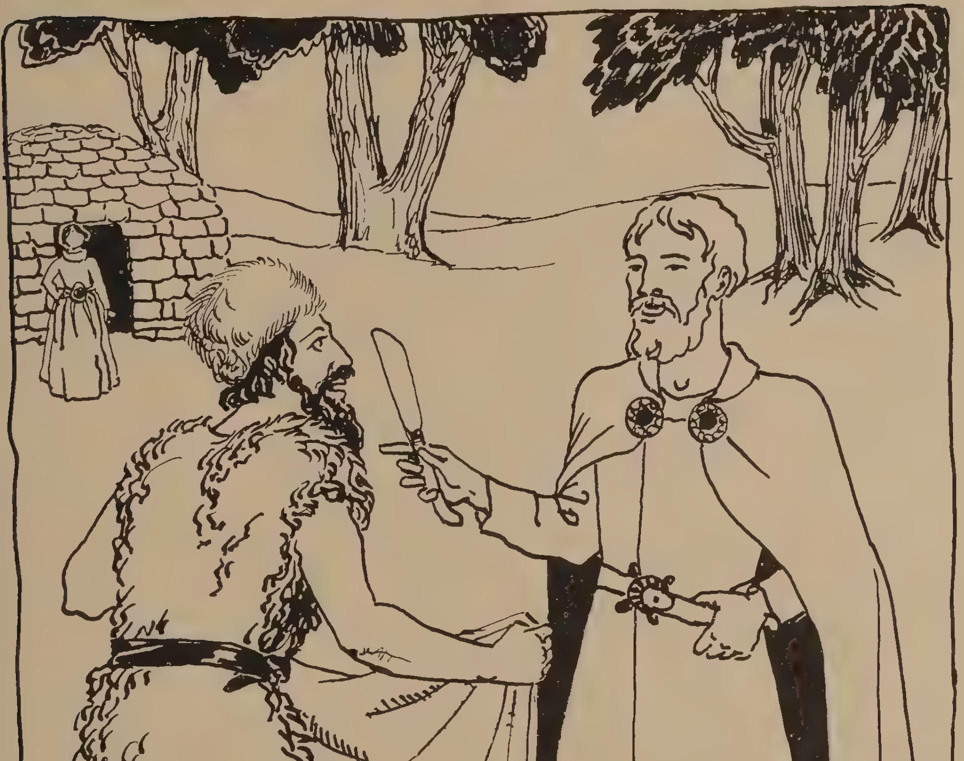


FIG. 8

Smith Exchanges Bronze Work for the Trader's Wares fire to make bronze. They thought fire was very wonderful. They liked to gather around its warmth in the evening; it cooked their food, it baked the pots, and melted the metals. Fire had made a great difference to their lives. They thought the sun was wonderful, too. It gave them warmth and ripened their corn. In those days there was no Christmas Day—Smith lived about two thousand years before the Birth of Christ. They did not know about God. They thought the fire and sun so wonderful and mysterious, that they worshipped the fire and the sun. They worshipped many gods. They put up great stones and temples to their gods.

When Smith died he was buried under a large round mound; it was called a barrow. Some of his possessions were buried with him.

As people had now begun to use bronze for their tools and weapons, we call this time in history the Bronze Age.

Handwork. The children have now gained some knowledge of the use of bronze for tools, weapons, and ornaments. They should also gain some idea of the beginning of bartering and exchange, and of specialized labour.

1. Let each child have a small sand tray and build a beehive hut. (*See* page 637.) Stones of different shapes and sizes can be made of plasticine. Pretend the hut belongs to Smith, and let the children draw, cut out, and colour brown spears, axeheads, shields, etc. Cut out and colour people to put in the sand tray.

2. Let the children play at being Traders, and exchange goods with each other.

3. Let the children draw pictures of (*a*) People worshipping fire. (*b*) People worshipping the sun. (*c*) A church. (*See* page 719.)

6. SOME PEOPLE WHO LIVED IN THE IRON AGE

CRANN and Tundra were a boy and a girl who had their home in a big marsh, which was often flooded, and looked like a lake, making their village look like an island. It was not an island; the men had built the village themselves.

On the low and swampy ground they had made a floor of log, bracken, brushwood and stones. This made a platform raised above the ground. There were about ninety round huts, and each had a layer of clay for the floor. Piles were driven into the clay, and the walls were made of wattle, and daubed with clay, to keep out the wind and rain. The roof was made of thatched reeds, and there was a roof-tree in the centre. There was a hearth inside the hut, made of stones. All round the village was a stockade, and there was a path of logs from the village to the dry land. They felt safe in their home in the marshes, for it was not easy for wild animals or enemies to reach it. (Fig. 9.)

The Mother's Work

The mother looked after the house and cooked the food. They had a good many animals—oxen, pigs, dogs, and sheep. The mother used the wool of the sheep. She knew how to spin the wool into yarn, and had made a spinning wheel of baked clay. Tundra helped her mother, and she could also weave. Her loom was made of branches. The warp was tied on, and weighted down with clay. She used a comb to push the weft threads tightly together. She wove woollen cloth to make into dresses; then she exchanged some of the cloth for pots. (Fig. 10.)

Crann liked to go to watch the potter at work. He had made a wheel, and on this he could make pots much rounder than by hand. The potter taught Crann to make patterns, pretty circles and curves. Crann's mother had only made dents with her finger nails. The potter had beautifully decorated pots to sell.

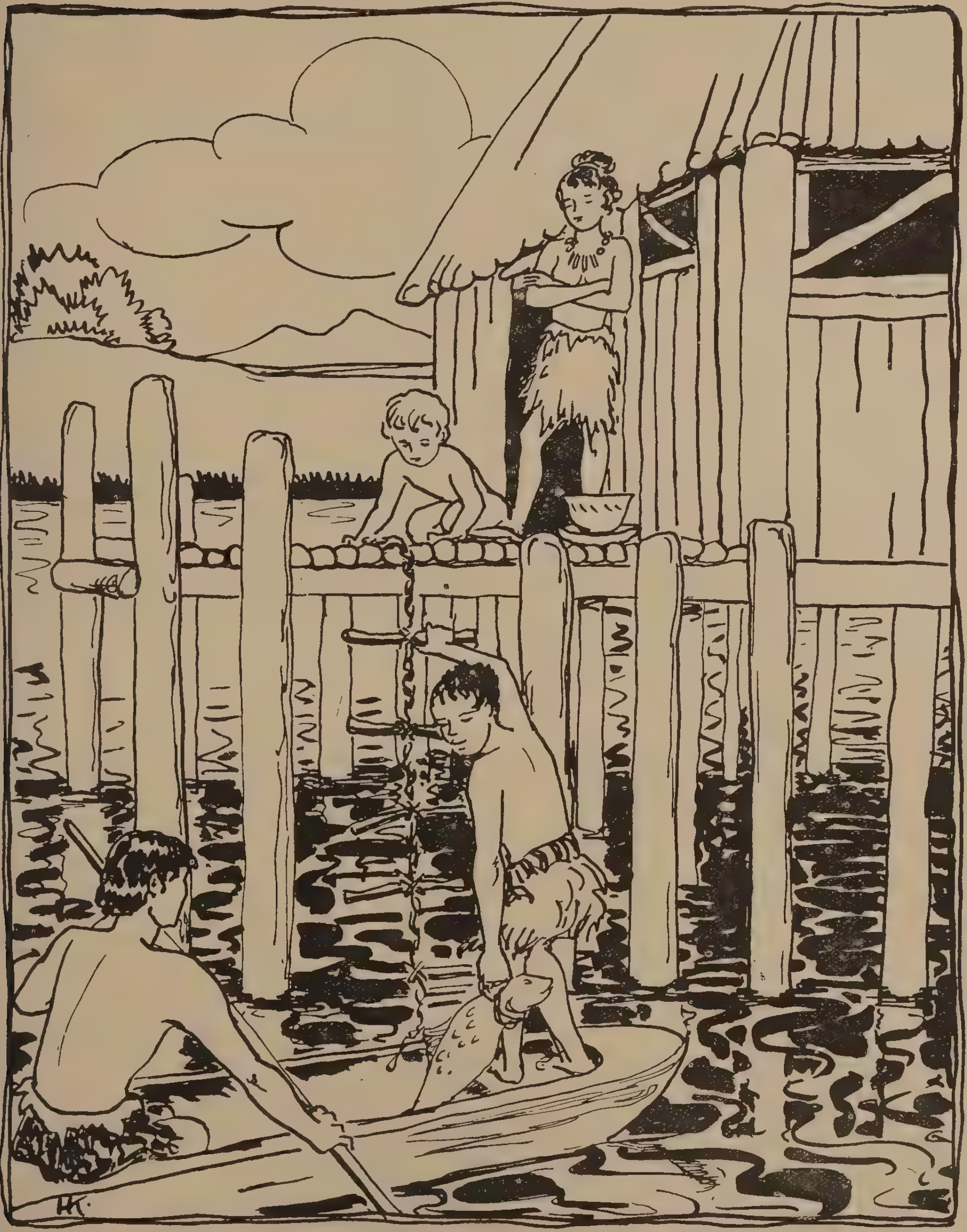


Fig. 9

What Crann's Father Did

Crann's father worked with wood. He had learnt to make round wooden bowls and wheels. He had made a pole lathe, and turned them. So the people called him Turner, and came to his hut to exchange wheels and bowls for other goods.

The people now began to make rough carts and chariots. They made friends with horses, and the horses pulled the carts along; or sometimes they used oxen.

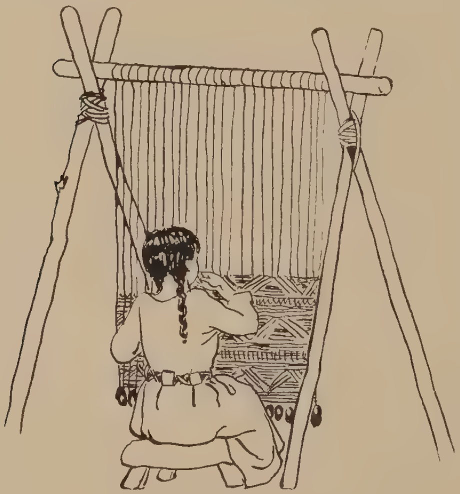


FIG. 10
A Primitive Loom

Turner's tools were made of bronze. One day Crann came to his father in a state of great excitement. In exchange for some wheels, he had been given a scythe. It was not made of stone, nor bronze, but of a new metal they had never seen before—it was iron.

Crann Helps the Smith

A smith in the village had experimented with various stones, and had discovered iron ore. He set up an iron-smelting furnace, and had dug a pit for the fire. Crann eagerly went to watch him, but unfortunately it was a calm day and there was not enough wind to make a very hot fire, such as was needed to melt iron. So Crann went home disappointed. He began to think about it. Surely there must be some way to make wind. At last he thought of making some bellows, and he made them from two goat-skins. Very excitedly he took them to the smith's hut. Smith was delighted, and paid him for the bellows with a piece of iron bar. Crann took the iron bar home.

One day, when some Traders came to the village, he bought a lot of goods from them and paid them with the iron bar. The people began to use iron bars to pay with. But they were awkward and not very convenient to carry about. They were rather like iron walking sticks. So, later on, people came to use round coins, and now we have money.

People found that iron was harder and better to use than bronze, so tools and weapons were now made of iron, and this time in history is called the Iron Age.

First there was the Stone Age, then the Bronze Age, and we are still living in the Iron Age.

Handwork. This story introduces the children to lake villages, and gives them some idea of weaving, improvements in pottery, the use of another metal, iron, and the beginning of money in exchange for goods.

1. Make a co-operative model of a lake village in the large sand tray. Prepare the sand tray to make it look like a marshy swamp. Blue paper should be put on the sand, to look like water, and pieces of damp moss put on it. Large twigs should be used to make the platform. Each child should make a little hut, and put a flat stone inside for the hearth. A stockade is put around the village.
2. Let the children make a primitive loom (Fig. 10), and weave a piece of cloth. (*See Section on Handwork.*)
3. Draw, cut out, and colour some pennies.
4. Talk to the children about some of the work the people learnt to do, and tell them that they came to be called by the name of the work. Get the children to suggest names of trades and write them on the blackboard, e.g. Smith, Turner, Potter, Weaver, Baker, Butcher, Glover, Carpenter, etc.
5. Children to write in their books, The Stone Age, The Bronze Age, The Iron Age.

STORIES ABOUT PEOPLE WHO DID THINGS FOR THE FIRST TIME IN ENGLAND

1. BEDE, THE FATHER OF ENGLISH HISTORY
2. CAEDMON, THE FATHER OF ENGLISH SONG
3. CAXTON, THE FIRST ENGLISH PRINTER
4. DRAKE, THE FIRST ENGLISHMAN TO SAIL ROUND THE WORLD
5. STEPHENSON, THE FATHER OF ENGLISH RAILWAYS
6. FLORENCE NIGHTINGALE, THE FIRST SOLDIERS' NURSE

1. THE STORY OF BEDE

THE people, in the days before history was written, worked hard and learnt many things. They made tools and weapons, built houses, learnt to use fire, and to cook. They learnt to sew and weave. They made harps and they also learnt to draw. We do not know very much about the lives of these people, because they could neither read nor write, so they have left no history books behind for us to read.

Many years later the people learnt to read and write and to go to church. Some good men, called monks, built churches. They also built big houses, near by, where they lived together like brothers, and the oldest and wisest of them all was like the father and was called the Abbot. These houses were called monasteries, and the monks taught the people to read and write.

Bede is Taken to a Monastery

In a north country village there lived a little boy called Bede. His father and mother died and he had no one to look after him. A kind man took pity on him and said, " Poor little Bede, he has no one to love him and take care of him. I will take him to the monastery. I am sure the monks will be good to him."

So the man took little Bede by the hand, and together they trudged along the dusty roads until they came, at last, to the monastery. The little, tired, ragged boy looked up and saw before him the big grey stone house, beside the grey stone church. The man knocked at the door, and it was opened by one of the Brothers. He looked at the tired travellers and said, " What do you want ? "

" This little boy is an orphan," he answered. " He is only eight years old. He has no father and mother. Will you take care of him ? "

The Brother went and told the Abbot. When the Abbot saw the little boy, his heart filled with pity. He looked at little Bede with a kind smile and said, " Why, yes. He must stay and live here with us." So little Bede stayed, and lived with the Brothers in the monastery.

The Monks Teach Him

The Brothers were very kind to him, and he watched them as they went about their work. They all wore long black cloaks with hoods; and they had girdles of rope tied round their waists. They slept in a long, bare room and, early in the morning, one of the Brothers rang the big bell. As soon as they heard its clang they got up, put on their cloaks, pulled the hoods over their heads, and with their hands folded in front of them, they passed out of the dormitory, down the stone stairs, across the courtyard to the grey stone church for their morning service. Then they had breakfast, sitting on benches at a long, bare, wooden table, in a bare room with stone walls.

After breakfast they each had their own work to do. Some worked in the kitchen, some looked after the garden, some tended the sick, some looked after tired and weary travellers, and some taught the children in the village to read and write.

Little Bede learnt to read and write, too. He

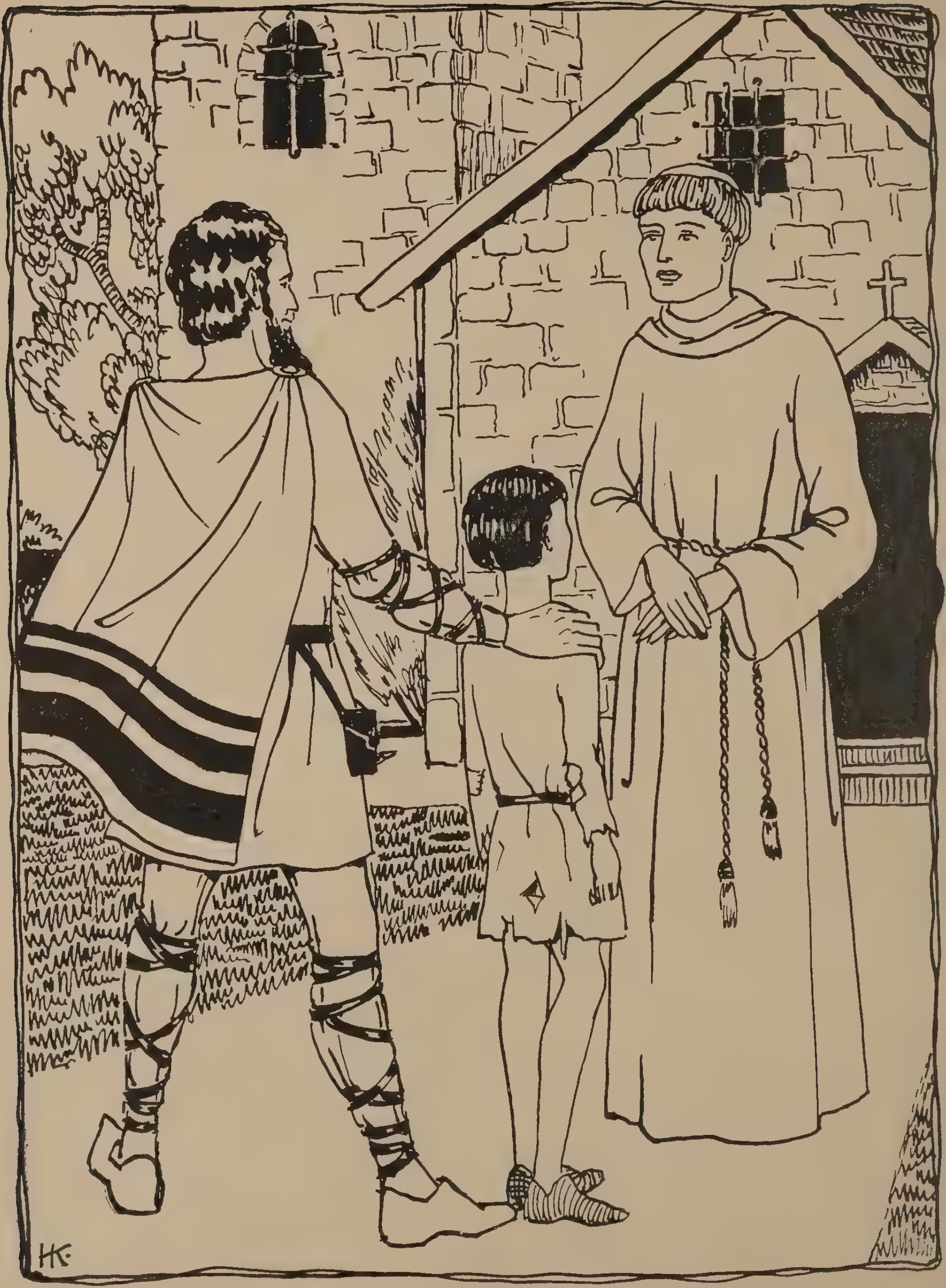


FIG. 11
Bede is Brought to the Monastery when a Young Boy

had a quill pen, and beautiful coloured paints. He wrote on parchment made from the skin of an animal. He learnt to make beautiful letters in gold, and green, and red, and blue. When he wanted his writing to be very beautiful, he drew little pictures in the letters, and ornamented them. Bede wrote each letter very slowly and very carefully. It took a very long time to write.

When Bede grew up, he became a monk and taught the boys in the village to read and write. Bede also wrote stories himself. He wanted the people to know all about the English people, and their lives and thoughts, and so he wrote a book about them. This was the first English history book, and it took a very long time to write.

The writing was called script, and Bede had a special little room where he wrote. It was called the Scriptorium, and here, at his wooden desk, Bede sat day after day, writing.

The First English Bible

The years passed by, and Bede became an old man. He loved the stories in the Bible, and wanted the people to have them written in English, instead of Latin, so that they could all read and understand them. So Bede set to work to write part of the Bible story. But he was now too old to sit at his desk in the Scriptorium. He was so old and tired, that he had to lie in bed in his little cell. As he could no longer write himself, one of the boys from the village came and sat at his bedside. Bede said the words, and the boy wrote them down.

Day after day the boy came and sat at his bedside and wrote and wrote. Bede was so old and tired, that his voice grew fainter and fainter. Sometimes the boy could hardly hear the words he spoke.

At last one morning the boy said, "There are only a few pages left to write, but you are too

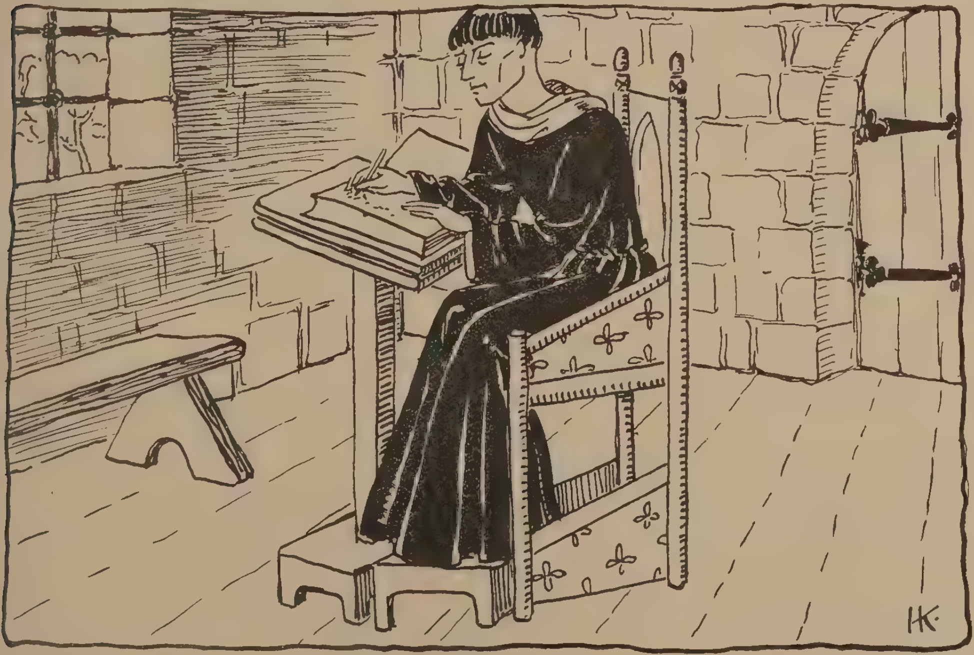


FIG. 12
Bede Writing the Bible

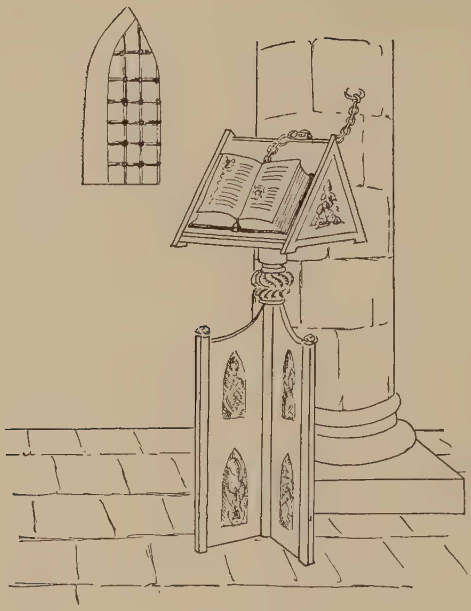


FIG. 13
A Chained Bible

tired to speak. It is too hard for you." But Bede replied, "No, it is easy, take thy pen, mend it, and write quickly." The boy went on writing, and Bede said the words. All that morning the boy wrote. All the afternoon he wrote. He looked at Bede and saw how old and tired he was. The boy was afraid the work would not be done in time. The sun set, and it began to grow dark. The boy wrote on. "This is the last page," he said. Then, "This is the last line." "It is well," said Bede, "write it." So the boy wrote the last line.

"Now it is finished," the boy said. Bede's heart was filled with gladness. "It is well," he said, "thou hast said the truth; it is finished." And then he began to sing a hymn of praise, and as he was singing, he died. But his work was finished, and the words which he had written were read by the people for many, many years.

Handwork. If it is possible to procure feathers, sharpen the ends, and let the children write a text, with coloured paints, as Bede would have written it. Otherwise use coloured crayons. Let each child roll up his piece of paper, and tie it like a scroll. Give each child an outline copy of Bede as a little boy to colour and cut out. These can be traced or enlarged from Fig. 11.

2. THE STORY OF CAEDMON, THE FATHER OF ENGLISH SONG

BEDE, in his history book, tells the story of the first English poet, who was called Caedmon.

Caedmon lived long years ago in a little village by the sea, called Whitby. Down below, near the sea, were the fishermen's huts. High up, on top of the steep cliff, stood a grey stone Abbey. In the Abbey lived a band of good men and women. They lived apart from other people, in order that they might devote their whole time to worshipping and praising God and doing good works. They were called monks and nuns. The head of them all was a very wise woman, called the Abbess Hilda.

There were a lot of cattle belonging to the Abbey, and near by were the huts where dwelt the men who looked after the cattle. Every night, one of the men slept in the cattleshed to look after the cows, and to see that no thieves came in to steal them. The men took it in turns to look after the cows at night.

They Tell Stories to Each Other

None of the men could read or write, and they had no books; nevertheless, they all loved stories. The winter evenings were often long and dull, and so, to amuse themselves, and to while away the hours, they would gather together in each other's houses and tell stories, and sing songs, and play on the harp.

The best story-teller, and those who could sing and play well, were very popular, and soon became famous, and were praised and talked about over the whole countryside.

Caedmon was just an ordinary countryman, who lived in a hut in Whitby. He helped to look after the Abbey cows, and often when he was out in the meadows, sitting on the cool, green grass, he would look at the beautiful sky and the hedgerows, at the tall trees and the gay flowers. He would watch the lark, soaring high in the heavens and listen to the merry singing of the birds. He thought, how beautiful was the earth, and how marvellous all the things that God had made.

In the Abbey, there was a hall, and here the men of the village would gather together to entertain each other with stories, songs and music, while they ate and drank and made merry together. They had a drink that was called mead. It was partly made of sweet honey. It was in a big bowl that was passed round. As they passed the mead cup from one to another, each in turn drank and then passed it to his neighbour. After the mead-cup, the harp was passed round, and each man in his turn had to sing and play. All the villagers attended these feasts and Caedmon went, too.

But Caedmon was always miserable and unhappy, because, when the harp was passed to him, he could neither play nor sing. Often, just before his turn came, he would quietly slip away, leave the merry gathering, and go to his hut and there he would sit sadly, saying to himself, "I wish I could make up songs and sing." (Fig. 14.)

Caedmon Receives the Gift of Song

One evening Caedmon attended the feast. It was his turn that night to guard the sheep. So just before the harp came to him he rose up and went to the cattleshed, thinking, "How I wish I could sing." Then he lay down on the hay to rest, with the one thought in his mind, "I wish I could sing." Soon he fell asleep.

As he slept, he dreamed a dream. He dreamt that an angel stood at his side and said, "Caedmon, sing!" Caedmon answered sadly, "I cannot sing." The angel said again, "Caedmon, sing me something." But Caedmon shook his head and said, "Nay, I cannot, that is why I leave the feast." But the angel said, "Nevertheless, sing me something." Then Caedmon said, "What shall I sing?" And the angel said, "Sing about the beginning of things."

Then a wonderful thing happened. Caedmon, who had never been able to sing, lifted up his voice, and in his dream sang a beautiful song. He sang about the wonders and beauties of the earth and the Glory of God.

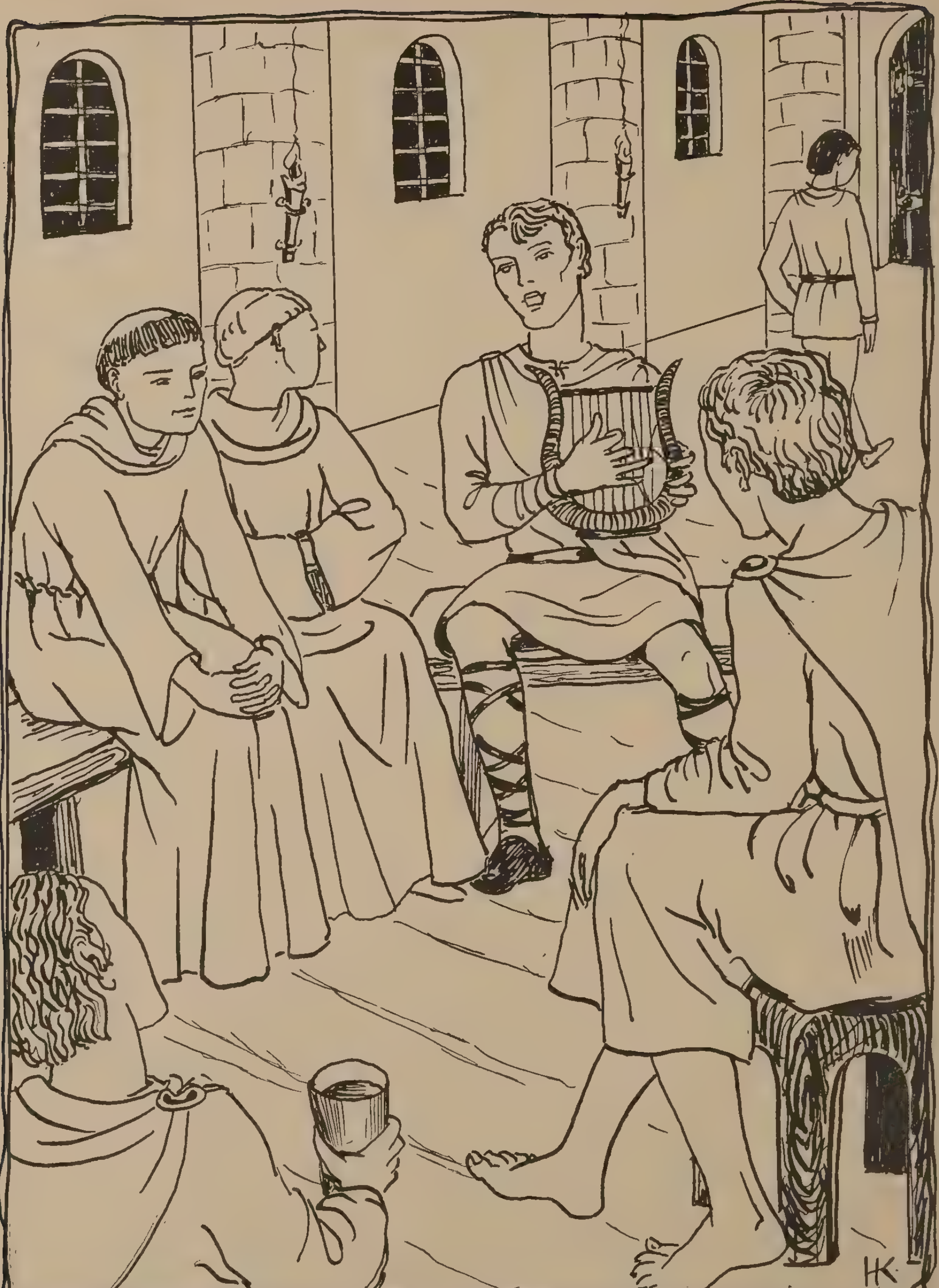


FIG. 14
Caedmon Departed when it Came to his Turn to Sing

He Remembers His Dream

Next morning, when he awoke, Caedmon remembered all the things that he had sung in his dream. He told the chief man of the village, who took him to the Abbess Hilda and he sang to her. She gathered together all the wise men from the countryside, and Caedmon sang to them. It was very beautiful.

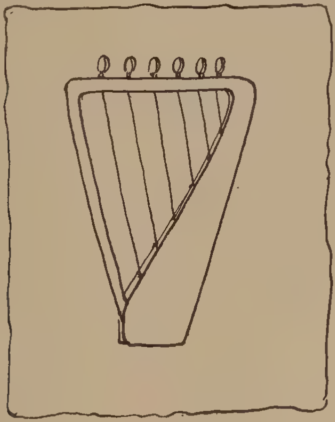


FIG. 15

Another Type of Harp used in Caedmon's Time

Then they read to Caedmon from the Bible, and he turned it into beautiful poetry. It was so wonderful, and so beautiful, that the Abbess Hilda asked Caedmon to become a monk. So he gave up being a cowherd and lived in the Abbey. He made wonderful songs and poetry for the people. The songs were all about the wisdom and glory of God, and the wonderful earth, and stories from the Bible.

When Caedmon was an old man, he was taken to a house near the Abbey, where the monks and nuns looked after the poor and sick. Caedmon, knowing that his end was near, asked the priest to bless him. Then he said, " Will it be long e'er it is dawn, when the monks will sing their morning song of praise to God ? "

" Not long," said the priest.

" Let us await that time," said Caedmon.

That morning, as the sun arose and the monks began to sing their morning hymn of praise, Caedmon passed away.

Handwork. Let the children write, " Caedmon is sometimes called the Father of English Song." Draw pictures of the cowherds in the Hall, passing round the mead-cup and the harp. Let the children try to make up short lines of poetry, e.g.—

The wind is blowing.
The fields are fresh and green.
The sun is shining on the trees.
The birds are singing, etc.

Make a little model in the sand tray of Whitby, with the sea and cliffs (*see* page 748) and the Abbey on the cliffs. Use blue paper for the sea, plasticine for the Abbey. Caedmon and the cows can be cut out of paper.

3. THE STORY OF CAXTON

IN the olden days all books had to be written by hand. They were written on parchment, and when they were finished they were rolled up and kept in jars or wooden boxes. A large number of these was called a library.

In those days there lived a man called William Caxton. His work was to copy books. It took a very long time. His eyes grew tired looking at the white parchment for so long, and often his hand ached as he held the quill and sat writing, writing, writing, day in, day out.

Some books were very long ; one was about thirty yards long. Sometimes it took two or three years to copy a book. Caxton often wished that there was a quicker way of making books, and a way that did not make the hand ache so. Books were very expensive ; only rich people could afford to buy them ; and very few people could read.

Coster's Discovery

At this time there lived a man in Holland called Coster. One day, when he was out, sitting on a log in the woods, he took out his knife and peeled off some of the bark. Then he cut it into the letters of the alphabet and took them home to amuse his children. He found that by putting ink on them, he could print the letters on paper. He was very pleased with this discovery, and was quite sure that books could be printed in the same way.

A man in Germany, called Gutenburg, also found out a way to print, and his way was much quicker. He made a machine called a printing-press. There were cases for holding the letters, and brushes for spreading the ink. It had a *press* for pressing the sheets of paper on to the inky letters.

Caxton heard of this wonderful invention. He could hardly believe it to be true. To be able to make one hundred copies of a book in a few weeks! Just think of it—it had sometimes taken Caxton a year to copy one.

Caxton Goes to Germany

So Caxton went to Germany to learn the secrets of the printing-press. (Fig. 16.) He stayed for some time, and made a printing-press for himself, and printed a book of stories about the heroes in the days of old. Then he returned to England, bringing his printing-press and his book with him.

He set up his printing-press in a room in Westminster. There he printed many books, story books and poetry books, and books of travel. People thought the printing-press was very wonderful. It was amazing that books could be made so quickly, and without making the hand ache writing them.

Crowds of people came to watch Caxton at his work. Even the King and Queen and little Princes came and would sit in the printing shop, watching Caxton at his work, and talking to him about this wonderful invention.

People often brought books which they had written by hand, to ask Caxton to print them copies. The books were no longer made into rolls, but were printed on to flat pieces of paper. Caxton made covers for the books to keep the pages together and to keep them flat. He was a bookbinder as well as a printer.

How the Books were Bound

Caxton's methods of bookbinding were very clumsy. He put the pages of the book between two wooden boards. These were covered with leather, which was fastened down by hammering in large brass nails. The back was stuck with glue, which was laid on very thickly to make it stick. The book was fastened with a thick clasp. The books were very heavy and clumsy; no one would want to carry them about.

Caxton taught some of his friends to print, and they helped him, and after he died they carried on the work of printing.

Some time after Caxton's time, copies of the Bible came to be printed, and a copy was placed in the churches of the land. Books were much dearer than they are nowadays. The Bible was very valuable, and each was fastened by a chain to a pillar in the church. This was done so that it could not be stolen.

The people would go into the churches, and a man who could read would read the Bible to the people. They did not have a Bible in their own homes; they were too expensive.

At first, only the very rich could afford to buy books. But as more came to be printed, they became cheaper, and men and women who could not read began to learn and to teach the children. So people began to grow wiser, and to have a greater knowledge of what was being done and thought in the world.

William Caxton is sometimes called the Father of English Printing.

Handwork. The children can cut letters into raw potatoes and stick printing can be attempted. (*See Handwork Section.*)

Let the children play at being the first printers. One can be Caxton, two or three his assistants, and other children be the people coming to watch him at work and talk together about how wonderful it is. The King and Queen and Princes can be represented.

Children may try to make their own books (*see* page 350), and decorate the covers.

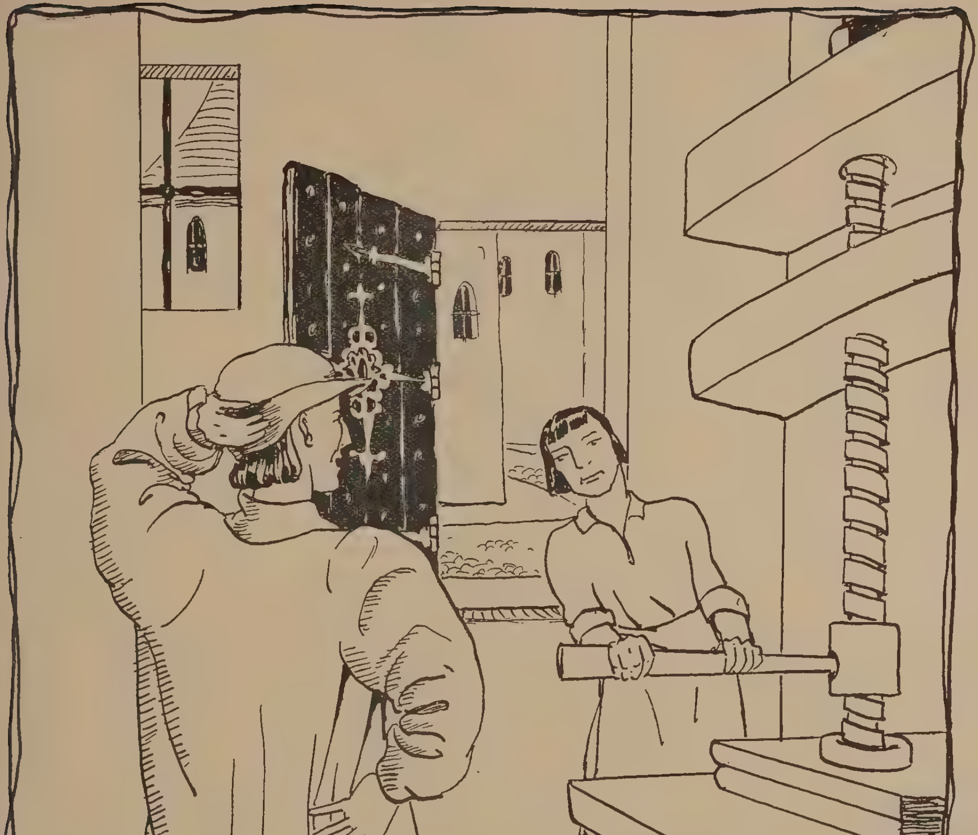


FIG. 16

Caxton Visiting a German Printing Press

4. THE STORY OF SIR FRANCIS DRAKE

MANY of the inventions of primitive times were rough, but they were beginnings which were improved in later years. Instead of dug-out canoes, good sailing ships were built, and the people became great sailors. One famous English sailor was a man named Francis Drake. He lived in Plymouth in the days of Queen Elizabeth. There was much gaiety in those days. The people wore brightly coloured clothes. The rich people dressed in silks, and satins, and velvet, and had ruffles round their necks. Both men and women wore these gay clothes.

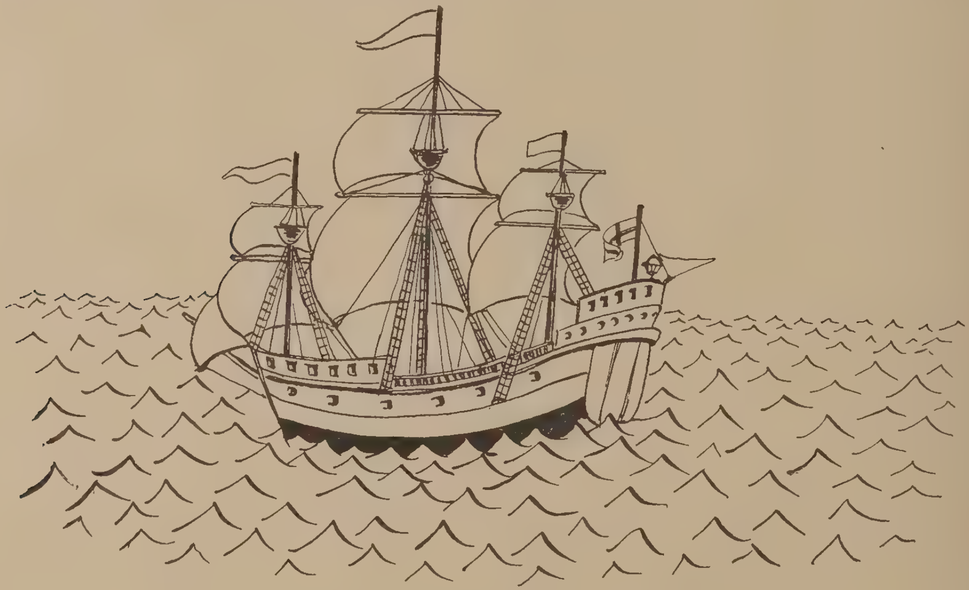


FIG. 17
The Golden Hind, in which Drake Sailed

The people all the world over were making discoveries. Printing had been invented, and many books of travel were read, and sailors of all nations wanted to explore new countries.

The Spaniards built mighty ships ; they were wonderful seamen, and sailed to many different foreign parts, bringing back to Spain gold and other rich treasures.

Drake Goes in Search of Treasure

But in those far-off days the English and the Spaniards were not good friends. The King of Spain wanted to be King of England, and the sailors used to fight each other if they met on the ocean.

Francis Drake was a very brave sailor. He went to sea when he was quite a young boy. Many times he sailed to the Spanish Main, and many fights he had with the Spaniards.

One day he set sail with five ships, to fight the Spaniards, should he meet them, and to explore and to see if he could find treasures to bring back to the Queen. The ship that he sailed in was called the *Golden Hind*. His ships were small, and the seas were rough and stormy, but Drake and his men were brave and ready to endure hardships.

They had many adventures on their voyage. They met Spanish ships, fought with them, and

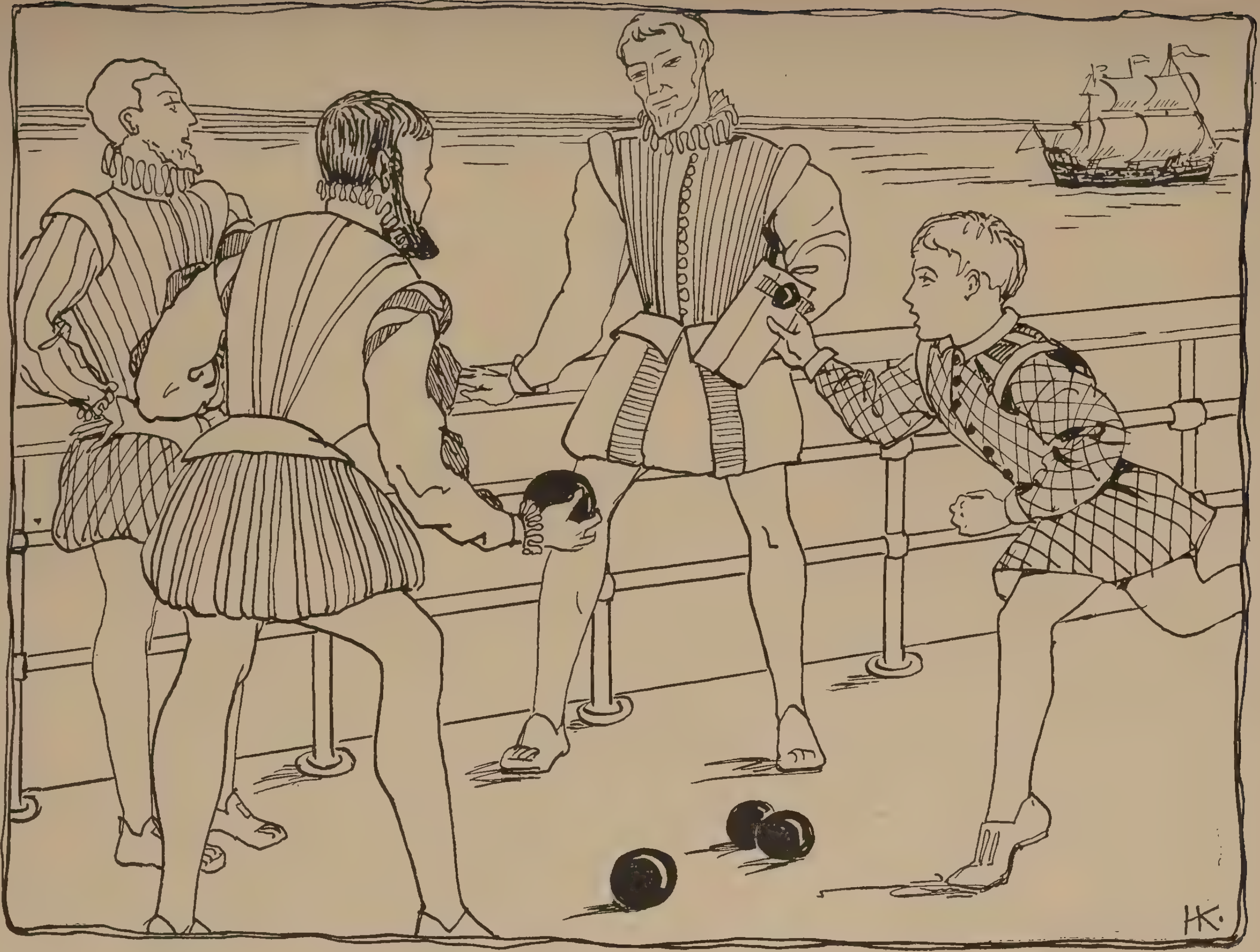


FIG 18

Drake Finishes his Game of Bowls before he goes to Fight the Armada took gold and silver from them to take back to the Queen. They sailed on and on. Drake would not turn back to go home. They encountered many storms and rough times. Drake had set out with five ships, but only one remained, the rest were lost, they had been sunk or driven back by the Spaniards. But still Drake sailed on. No one from England had ever sailed that way before, they did not know the way, or what perils would lie in their path, but still Drake sailed on.

At last he set out for home, but he did not turn, and come back the same way; he sailed straight on, and, after being away for three years, he arrived home in England. He had sailed right round the world. He was the first Englishman to sail round the world, and the English were very proud of him. The Queen was so pleased that she called him Sir Francis Drake.

The Great Armada

At last the King of Spain made up his mind to send a great fleet of ships to England, so that he could beat the English and be king. The Queen was not afraid, for she knew that she had many brave sailors like Sir Francis Drake who would help her to drive the Spaniards away.

The King of Spain got ready a fleet of great ships. He called it "The Invincible Armada," which meant " the fleet that cannot be beaten." The ships were very large and powerful beside the little English ships.

The English were always on the look-out for the Spanish ships. Then, one day, the watchers saw the Great Armada sailing up the English Channel. There was no wireless, or telegrams, to carry the messages in those days. But on many a hill in England fires had been laid, ready to light, to tell the news that the enemy were near. As each watcher saw the blaze, he lit his fire, and soon all the beacon fires from one end of the land to the other were blazing forth the news, " The Spanish Armada is here." There was great excitement, and people were rushing hither and thither, making preparations to defend their country.

Sir Francis Drake and some of his friends, who were sea captains, were playing a game of bowls together on Plymouth Hoe. Presently a messenger came running up. " The enemy are coming, the enemy are coming!" he cried breathlessly. " The Spanish Armada has been sighted in the English Channel ! "

The chief captain dropped his ball. " We must go at once," he said, " and hurry to our ships." " No ! No ! my lord," said Drake in a calm voice ; " we will first finish our game of bowls. There is time enough to finish our game, and thrash the men of Spain." So Sir Francis Drake went on playing. He finished his game and won it, too. Then he and the other captains went to their ships.

Drake Sinks the Spanish Ships

The Invincible Armada came sailing up the Channel, and the small English ships lay hidden in Plymouth Harbour. When the Spanish ships passed them, they came out and fired their guns, and went away so quickly that the Spanish sailors could do them no harm. The fighting lasted a week, then a great storm blew, and what was left of the Invincible Armada returned to Spain, much to the joy of the English people.

Sir Francis Drake was a brave sailor. He was the first Englishman to sail round the world. After this, English ships sailed to all parts of the world and England became well known in all foreign lands.

Handwork. 1. Let the children write, " Sir Francis Drake was the first Englishman to sail round the world." 2. Make models of the *Golden Hind* with sticks, plasticine, and paper. (*See* Fig. 17.) 3. Give each child an outline of a ship. These can be traced and hectographed by the teachers. Let the children colour them and cut them out, and then stick them on to a large piece of paper to make a fleet sailing up the Channel. 4. Draw pictures of the beacon fires being lit, to tell the news of the arrival of the Spanish Armada.

5. THE STORY OF GEORGE STEPHENSON

NOWADAYS, it is very easy to journey from place to place. There are trains and motor-cars, and steamers, and aeroplanes, and we can visit our friends all over the world.

In primitive times, people could not journey far, as they had to walk everywhere they went. Then they made friends with horses, and they could ride. Turners learnt to make wheels, and then carts were made.

For many, many years the quickest way to travel on land was by coach. It was slow, and the roads were often bumpy, and the coachmen had to stop at inns to feed and rest the horses.

But people now had books, and they could read and learn each other's thoughts. They were finding out many things. One man, called James Watt, found out how to use steam. When he was a little boy he often sat in a chair by the kitchen fire and watched the kettle boil. He noticed how the steam came out of the spout. He saw the steam make the lid of the kettle move up and down. He thought about this. "If the steam can make the kettle lid move, it ought to make other things move, too." James Watt made a steam engine. Later on George Stephenson made the first railway engine.

He was too Poor to go to School

George Stephenson lived about one hundred years ago. When he was a little boy he lived near a coal pit in the North of England. His father was an engine man, and was very poor. There was no money to pay for George to go to school, and so he did not learn to read and write. He had several small sisters and brothers, and he spent the day looking after them. He had to see they did not get in the way of the coal trucks.

George loved to watch the colliery engines. He liked engines so much that in the evenings he would make himself little toy engines, out of clay that he got from the ground. He was always thinking about engines and how he would like to make a real one.

While he was still a boy, he had to go to work to earn money, as the family was so poor. First he looked after the cows for twopence a day. Then he went to help on a farm for fourpence a day. Some years after, he went to work at the pit. This he liked very much, because he could watch the engines he loved so well. He was now grown up, but he could neither read nor write. However, he was now earning money, so he went to a night school. He wanted to learn all he could, so that he could make a railway, that would run on lines and draw trucks and carriages for people to ride in.

Stephenson's Idea

At first people laughed at the idea. "It is not possible," they said, "for coaches to run without horses to pull them." Others said, "It is not safe, the engine might blow up." Some people were very frightened at the thought of a railway train, and said that they would never dare to ride in one.

George Stephenson went on working hard at his "Iron Horse," as he called his engine. He tried again and again. and at last he succeeded, and his railway train was ready and the lines laid. It was called "Puffing Billy." It ran from Stockton to Darlington. There were some carriages carrying coal and flour, and there was a carriage for passengers. This was not comfortable like our railway carriages are, but was rather like a cattle truck.

Crowds of people gathered together at the side of the line to watch, and as "Puffing Billy" passed them they waved and cheered. It was a great day for George Stephenson, for it was the first railway train to carry passengers, and his great plans had really come to pass. Afterwards, railway lines were laid all over the world, and to-day we can travel by train in every land.

Handwork. 1. Let the children write "George Stephenson was the Father of English Railways." 2. Let them draw pictures of James Watt sitting by the fire watching the steam come from the kettle. 3. Make "Puffing Billy" from waste material, e.g. match boxes, corks, cardboard, and paper. (*See Section on Handwork.*) 4. Draw "Puffing Billy" (Fig. 19) on a large sheet of paper. Give hectographed outlines of people to cut out and colour, to make a co-operative picture of a crowd watching "Puffing Billy."

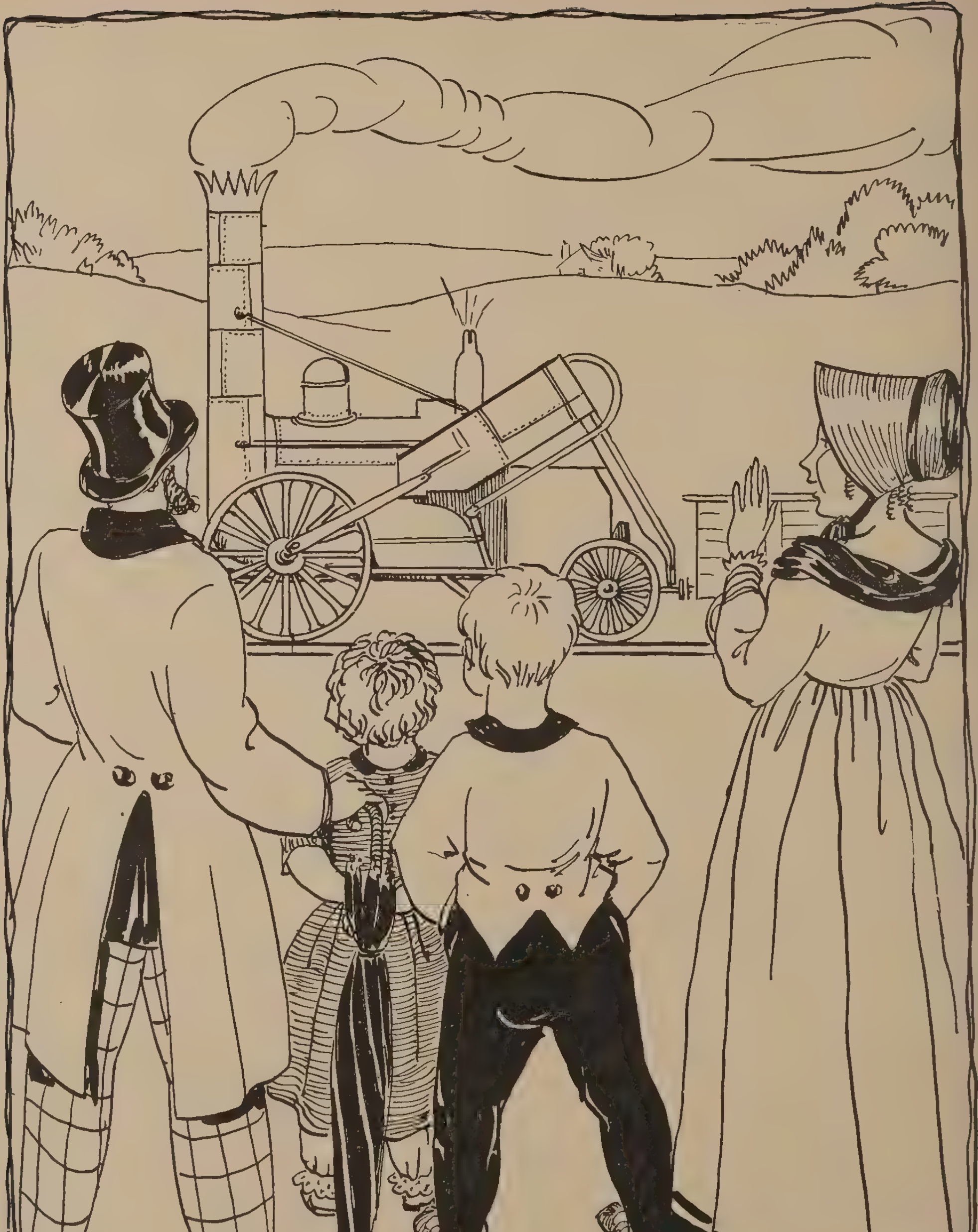


FIG. 19
Puffing Billy's First Journey

6. THE STORY OF FLORENCE NIGHTINGALE

NOWADAYS, when an army goes out to fight, doctors and nurses go too, to look after the wounded soldiers. At one time there were no such nurses, and many soldiers died through lack of help. The first soldiers' nurse was a woman named Florence Nightingale.

When Florence was a little girl, she lived in a big house, with a garden, in Derbyshire. She loved to play with her dolls and often pretended that they were ill, and nursed them. She used to put them to bed, and smoothed their pillows. She would tempt their appetites with dainty food, which she carried to them on her little toy plates, and she gave them cool drinks from her little toy cups.

But not so her sister Frances. Frances did not care much about her dolls, and often their legs and arms got broken, their heads cracked, or they were singed by the fire; but Frances did not bother about them at all. However, Florence took care of them, and loved to bandage their legs and arms and nurse them.

Florence also loved all animals and was a kind friend to them, too.

Florence Cares for a Sheep Dog

One day, when Florence was riding on her pony over the downs with the Vicar, they passed old Roger, the shepherd, looking after his sheep. He was trying, with some difficulty, to collect his scattered flock himself. The vicar stopped to ask him where his good sheep dog was. Old Roger replied, "Some naughty boys have thrown stones at him. They have broken his leg. Poor old Cap will no longer be of any use. He will not be able to run about, and I shall have to have him killed."

When Florence heard this, she was so sorry for poor Cap, and so she went all by herself to Roger's hut. There lay the poor sheep dog in great pain. Florence got some hot water and gently bathed his wounds, while Cap looked on with patient, grateful eyes. Then Florence wanted some bandages. There were none in the hut, all she could see was Roger's clean smock hanging up on a nail. She took it down, and tore it into strips to bandage Cap's leg.

In the evening, when Roger returned, he was so surprised and pleased to find his faithful dog much better. Cap's leg was not really broken, and Florence had doctored it so well that the swelling had gone down, and before long Cap was once again able to run about and help Roger to look after the sheep.

After this Florence became quite famous as an animal's doctor. When any of their pets were hurt, the villagers would bring them to Florence to nurse.

Florence's Pets

Florence also had many pets of her own that she loved very dearly, and she was always kind to old and worn-out animals. Out in the paddock was an old pony called Peggy. Peggy was a great friend, and every morning Florence would go out to see her. Peggy knew the little girl's footsteps and, as soon as she heard her, she came trotting up to the gate to meet her. Florence always had something nice for Peggy, an apple or a carrot, or some other dainty. She would often hide something in her pocket, and Peggy would poke her nose into the pocket in search of it.

When the stable cat had kittens, Florence always went in to see them, and the mother cat always purred with delight, for she knew that Florence would be kind and would not hurt her little pussies.

Florence also loved the squirrels and fed them with nuts, and often in the springtime there was a little woolly lamb to care for.

Florence was also interested in the poor and sick people of the village, and she often visited them to cheer them up, and take them dainty morsels of food.

Nurses are Wanted

When Florence grew up, there was a war, and the English soldiers had to go away to fight. They had a long way to go, many miles by sea. The winter was cold and bleak, and the poor soldiers had many hardships to endure. Many were wounded, and died through lack of comfort and care.

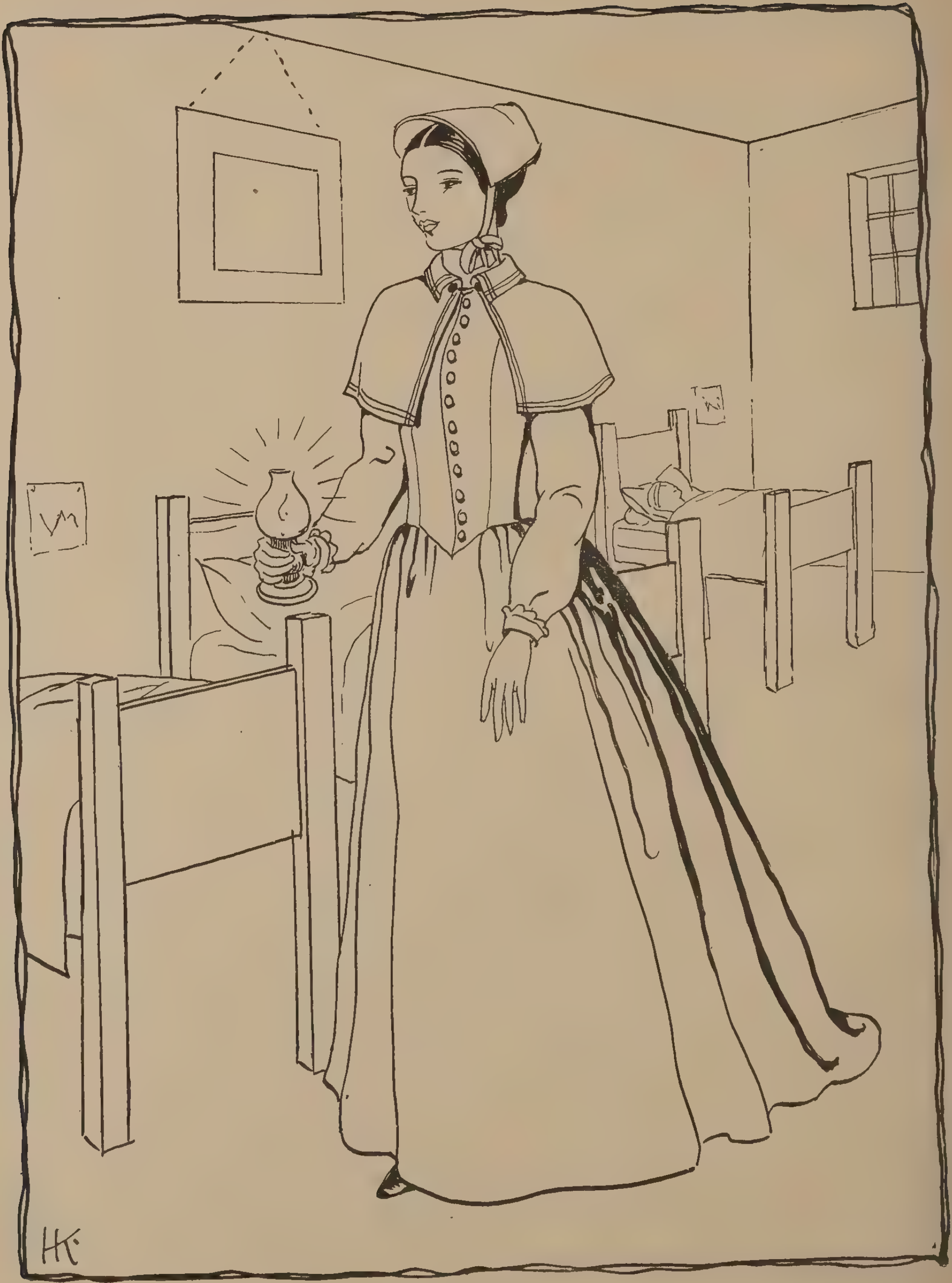


FIG. 20

Florence Nightingale—the Lady of the Lamp

One day, a letter came to England, telling the sad news, and asking if some brave ladies would go out to look after the wounded soldiers, and so save their lives. Florence Nightingale said at once that she would go. A great fight had taken place, and many soldiers were lying wounded and awaiting the care of kind nurses. So Florence Nightingale and her band of brave nurses went out across the sea, where it was cold and bleak and comfortless, to nurse the soldiers.

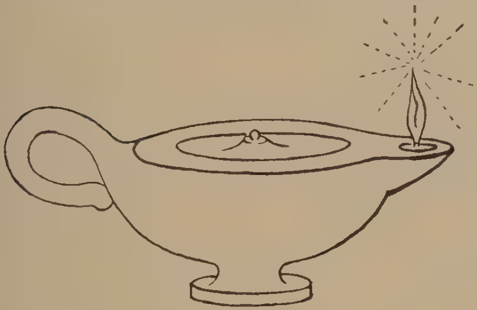


FIG. 21 *a*

Florence Nightingale's Lamp, Modelled in Plasticine

The poor men could not understand the change. Now they had nice clean beds, and good food, and were properly cared for.

Florence was the head of the hospital, and she never seemed to grow weary as, day after day, she nursed the soldiers back to life. Even at night she was on duty. In the dark silence of the night she quietly went round the wards, carrying a lamp in her hand. The sleepless soldiers looked forward to her coming, and so she came to be known as "The Lady with the Lamp."

She stayed out two years, and then she returned to England. Some friends wanted to give her some money for her noble work. She would not accept it for herself; instead, she built a school for nurses, so that other nurses could learn to tend and care for the sick.

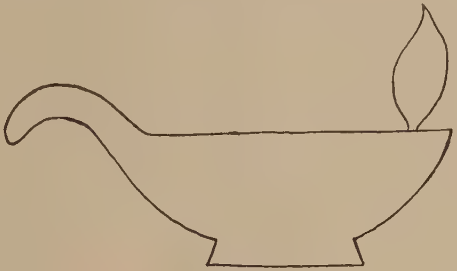


FIG. 21 *b*

A Similar Lamp for Paper Cutting

It is cut from a double piece of paper with the ends pasted together, so that it will stand

Handwork. Let each child make a hospital ward from an old boot box. The beds can be made from match boxes or stiff paper, and the bedclothes, soldiers, and nurses, can be cut out of paper and coloured, 2. Model "Cap," the old shepherd's dog (*see Section on Nature Study*), in plasticine and bandage one leg. 3. Make a model of Florence Nightingale's lamp. (Fig. 21.) 4. Let the children colour a Red Cross flag.

SIX STORIES ABOUT GREAT PEOPLE

1. ALEXANDER THE GREAT
2. THE STORY OF HORATIUS
3. ALFRED THE GREAT
4. ROBERT BRUCE AND THE SPIDER
5. JOAN OF ARC
6. PETER THE GREAT

1. ALEXANDER THE GREAT

THERE once lived a king called Philip. He was King of Macedonia, near Greece. In those days there were many wars and much fighting. One day, a messenger came to Philip with tidings. He told him three things. He said, "O King, your army has won a victory. Your horse has won a prize at the Olympian games. You have a baby son."

This baby son was called Alexander, and when he grew up he became one of the world's greatest conquerors, and was known as Alexander the Great.

Alexander was a fine, handsome boy. His teacher was called Aristotle, and was one of the wisest men that ever lived. He taught Alexander to be kind, and generous, and brave. As Alexander grew up, he looked forward to the day when he would be a soldier like his father. Every day he used to practise running and wrestling, and riding on horseback.

Alexander's Horse

One day a man came to the Palace with a horse to sell. The King went out to see it, and Alexander, who loved horses, went too. The King was very pleased with the horse. It was so fine, that he thought he would like it for his own. He ordered all his best grooms to ride the horse round the field, so that he could see if it was a swift runner, and whether it was gentle and safe.

The horse was called Bucephalus, and really was very beautiful to look upon. But it was young and frisky, and no one had yet been able to mount it. The grooms all thought it would be quite easy to ride Bucephalus. One after the other they tried; but without success. The horse tossed its head, and reared, and would let no one come near. Not even the King's best horseman could manage it. They gave up in despair, and told the King that it was a very bad horse indeed, and the King said, "Then take the horse away, I will not buy it."

But the boy Alexander had been watching all the time, and he called out, "What a splendid horse we are losing, because these men have neither the skill nor the courage to manage him. They are cowards, all of them."

Philip turned to the boy and said, "My son, these men are older and wiser than you. They are my best horsemen. You speak as if you could ride Bucephalus."

"And so I could, father," the boy answered boldly.

The King said, "Then try, my boy, and if you succeed, I will buy you the horse. But what if you fail?"

"I will pay for the horse myself," answered Alexander.

Frightened of His Shadow

When the people heard this, they all burst out laughing. But Alexander was not joking. He was serious, for he had seen something that no one else had noticed, and that was that the horse was being frightened and annoyed by its own shadow, which was all the time moving in front of him.

Alexander took firm hold of the bridle, and turned the horse towards the sun, so that the shadow was behind him, where he could not see it. He gently stroked Bucephalus with his hand, and the horse gradually grew quieter, was less restless, and was at last standing still. Alexander would now have jumped on his back, but he still had on his little white linen cloak, which he always wore in the house. It was a loose cloak, and fell over one shoulder (Fig. 23).

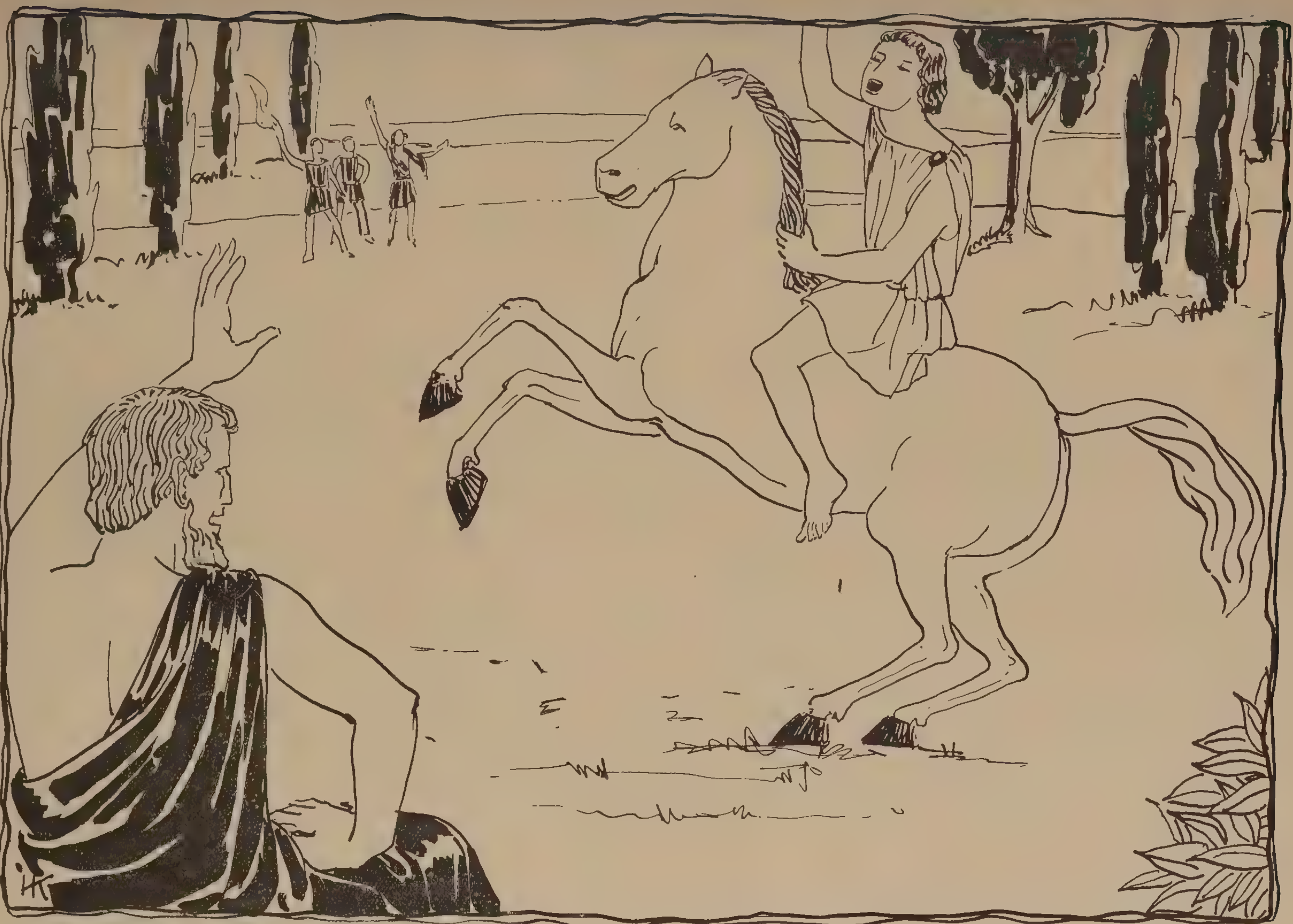


FIG. 22

Young Alexander Riding on Bucephalus

He could not ride in it, for it would have been in the way, but he was afraid of startling Bucephalus if he took it off. So he spoke gentle and soothing words to the horse, and with one hand stroked his neck. Meanwhile, with the other hand, he undid the clasp that fastened the cloak to his shoulder and let it slip on to the ground. At the same time he jumped on the horse's back. He did this with such a bump, and so suddenly, that he really did scare Bucephalus, who began to kick and rear as before, and then began to gallop fiercely round the field. Round and round he went. It was all Alexander could do to keep his seat, but he held on tight.

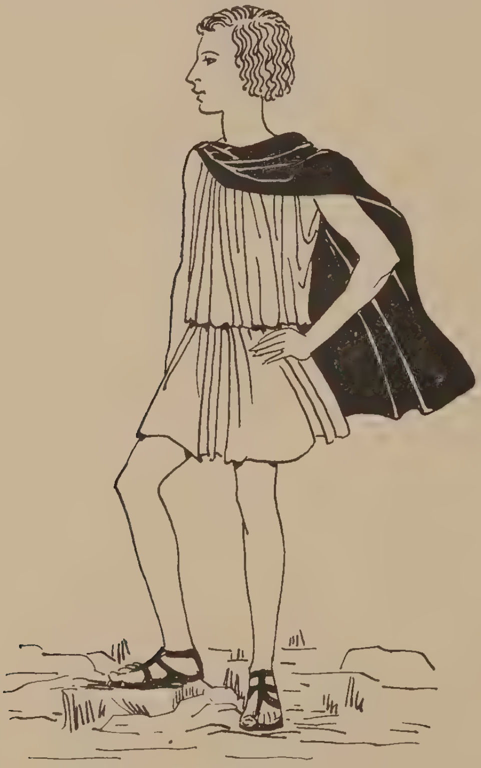


FIG. 23

Alexander as a Young Boy, with his Little Linen Cloak

The people watched with wide-open eyes. They were breathless with excitement. Philip's heart beat fast with fear. He wished he had not let his son attempt so daring a deed. The horse would surely throw him, and he would be killed.

Alexander had no fear. He tightly held the reins and gradually the horse slowed down, and very gently Alexander guided him, and at last he obeyed him and they galloped joyfully together round the field. Then Alexander rode up to his father, sprang from his horse, and stood before him, victorious. The people cheered loudly, and Philip proudly kissed his son.

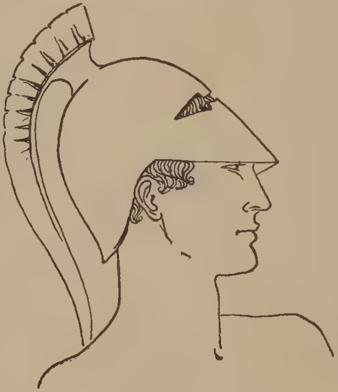


FIG. 24

A Greek Helmet

Alexander Becomes King

When Alexander grew up, he became King, but he thought Macedonia was too small a kingdom for him, and he set off to make himself master of all the countries around. He loved his horse Bucephalus very dearly, and he always rode Bucephalus when he went to battle. Then, at last, after many years, Bucephalus was wounded in battle and died. Alexander was very sad at losing him and mourned deeply for him. He built a city on the spot where he was buried, and called the city Bucephalia in memory of his beloved horse.

Alexander was one of the greatest men who ever lived. He was a wonderful soldier and leader of men, and he admired poetry and noble things. He is always known as Alexander the Great.

2. HOW HORATIUS KEPT THE BRIDGE

HORATIUS was a little Roman boy who lived long ago. He learnt to love his city, and knew that he must always be ready to protect and die for Rome. Rome had walls all around the city, and the River Tiber flowed past. Across the river was a bridge to the city gate, and no one could enter or leave the city without going through the gate. When Horatius grew up he became the Keeper of the Gate. He would often watch the river, splashing up against the city walls. The river Tiber was a god to the Romans, and they used to pray to the Father Tiber.

At that time the Romans had a cruel king called Tarquin, whom they did not like, for he was proud and cruel, and did not help the city. At last the Romans drove him away and chose two of the wisest men in the city to rule over them. These men were called Consuls.

Tarquin Attacks Rome

Tarquin did not like this, and made up his mind to get back the kingdom. He went to some people called the Tuscans and asked the King of the Tuscans to help him, which he promised to do. One night, Tarquin and a large army of Tuscan soldiers came marching across the fields, trampling down the grass with their heavy tread and burning houses as they passed. The news spread over the country, "Tarquin is coming." Men and women snatched up their possessions and fled with their children to Rome for safety. Horatius opened the gate and let them in.

Soon the news spread throughout Rome. The people gathered together in crowds near the Gate, and the Consul and chief men hurried to the river side to see what could be done. The Consul anxiously looked across the river, and in the distance he saw Tarquin and the Tuscan army marching towards the bridge. "If they once get across the bridge Rome will be lost," he said.

"Let us break down the bridge," said someone. "Yes, if we do that, they cannot get across, and our good Father Tiber will save us," said someone else. But when the Consul looked across the river, he saw the enemy coming nearer and nearer. "The plan is good," he said, "but it is too late; the enemy will be upon us before the bridge is down."

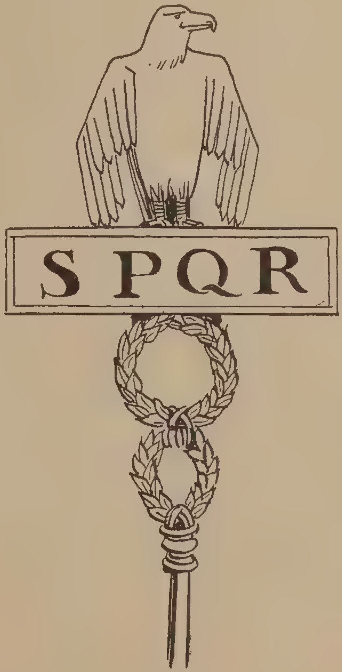


FIG. 25

A Roman Standard

Horatius Offers to Hold the Bridge

Horatius bravely stepped forward and said, "Sir Consul, the path to the bridge is narrow; only one can cross at a time. I will go to the other side and stop the enemy from crossing, while you and the other Romans cut down the bridge." Then two other brave Romans stepped out and said, "We will go, too, to help Horatius keep the bridge." So Horatius and his two friends fastened on their shields and helmets, and crossed the bridge and stood waiting at the narrow entrance.

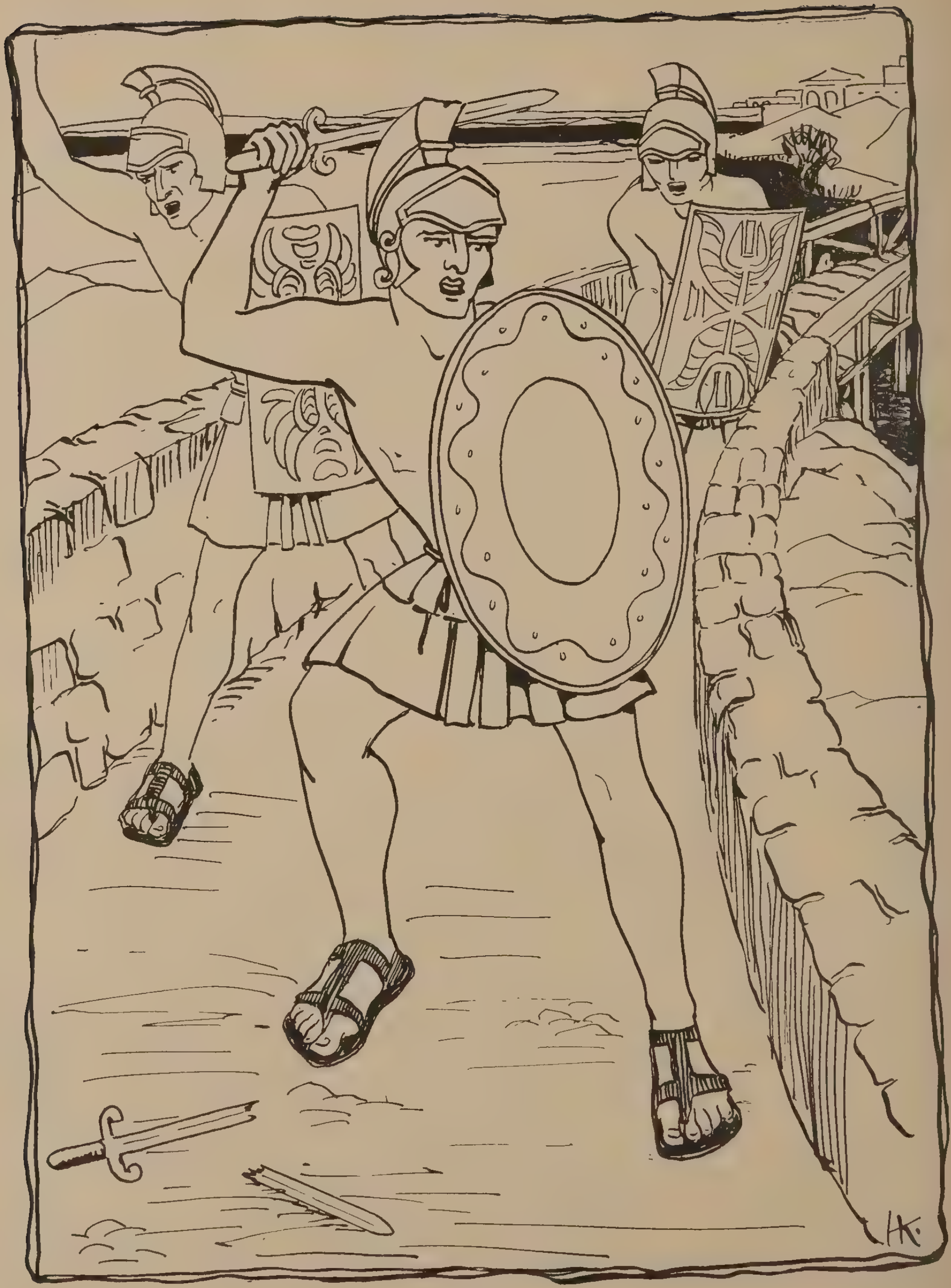


FIG. 26

Horatius Defends the Bridge with the Help of his Two Friends

Towards them came Tarquin and the Tuscan army. Nearer and nearer they came, their shields flashing in the sunlight. They reached the entrance to the bridge. When the great army looked and saw three Romans facing them, they burst out laughing. First three Tuscan soldiers tried to get over to the bridge, then three more, and yet again more, but each time Horatius and his two friends bravely drove them back, and they fell to the ground.

All this time the people in the city were busy with their axes and their hammers. They smote at the planks of the bridge with all their might, loosening the props.

The three Romans were getting tired, theirs was strenuous work. They could not keep a whole army at bay much longer. When would the bridge be ready to fall ? Then from across the river came the welcome shout, " Come back, come back, Horatius ! Back, Lartius ! Back, Herminius ! The bridge is falling, the bridge is falling."

The Bridge Falls

Lartius quickly ran back. Herminius darted after him. They reached the other side in safety. Then there was a loud crash like thunder, and the tottering bridge fell with a mighty splash into the river. The Romans raised a cheer, the bridge was down. The enemy could not get across ; Rome was saved. Their shouts soon died down, for as they looked across they saw that brave Horatius was all alone on the other shore ! There was a deathly silence as they watched, wondering what he would do. In front of him was the Tuscan army, behind him flowed the deep waters of the Tiber. He was all alone.

" Down with him," yelled one of the Tuscans. " Now yield thee," shouted another, with a sneer.

Horatius took no notice. He stood still for a moment, then slowly he turned round. The enemy was now behind him, the river in front. Then looking at the river, he prayed to it. " O Tiber, Father Tiber, I pray you to save me " ; and with these words he plunged headlong into the river and, with his heavy armour on, he began to swim across.

The current was strong and the waters deep and rough. The people all gazed, breathless with fear. Could he do it ? No, he was sinking ; he would drown. Then they saw him rise again in the waters. On and on he swam ; the river he loved and worshipped was holding him up.

At last he reached the other side in safety. He passed through the city gates, the people crowded round their hero to shake hands. There was clapping and loud cheers for brave Horatius who had kept the bridge, and saved Rome from the cruel King Tarquin.

Handwork. The story may be acted. Let the children write and learn—

" O Tiber, Father Tiber,
To whom the Romans pray,
A Roman's life, a Roman's arms,
Take thou in charge this day."

3. ALFRED THE GREAT

ONE of England's greatest men was a King, called Alfred the Great. He lived long ago, before the days of printed books, and when the English rowed about in roughly made boats and dug-out canoes.

When Alfred was a little boy his mother, the Queen, often read poetry to him. He loved to listen and say it over and over again until he knew it by heart. One day the Queen showed Alfred and his brothers a beautiful book of songs. She read the songs to them. "What a lovely book," said Alfred, "and what beautiful songs." The Queen turned to the boys and said, "I will give the book as a prize to the one who first learns to read it."

In those days very few people could read. Alfred's brothers did not care to learn. They preferred to go out and play. But Alfred found a master to teach him, and worked hard and persevered, and at last one day he proudly went to the Queen and said, "I can read." He won the prize, and had learnt to read before his big brothers did.

Alfred Becomes King

Later on Alfred became King. In those days some fierce people, called the Danes, used to come to England in big black ships, and robbed the people and tried to take their land. Alfred had a very hard time trying to drive them away, and one time he himself was driven back by the Danes. But Alfred was brave, and did not lose heart. On one occasion he and his men had to go away and hide in a place where there were wet marshes all round. Alfred went about disguised as a beggar.

One day, when he was out, he was feeling

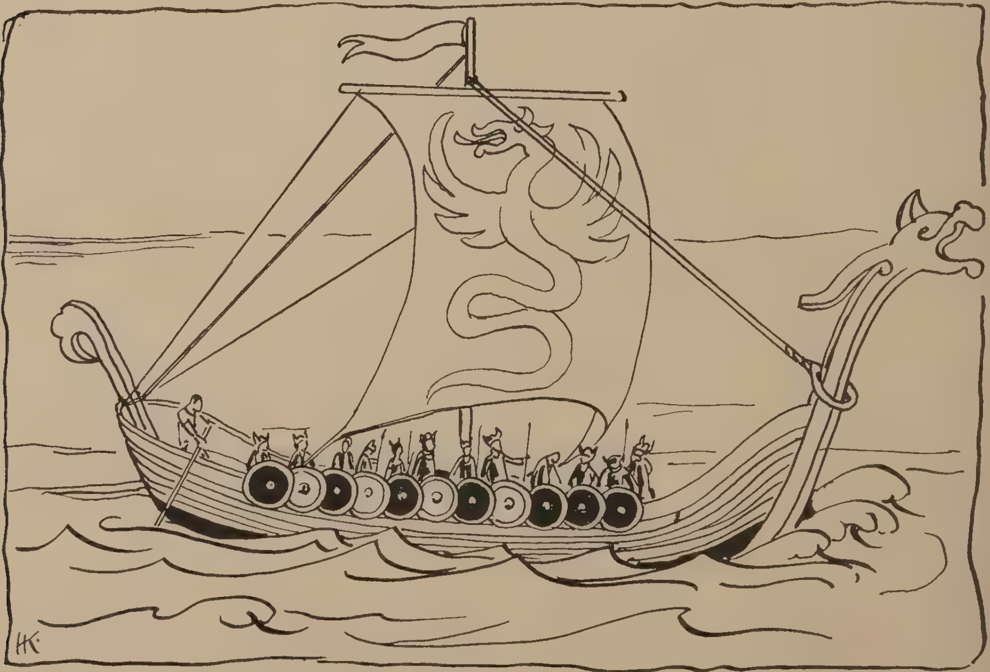


FIG. 27
A Viking Ship

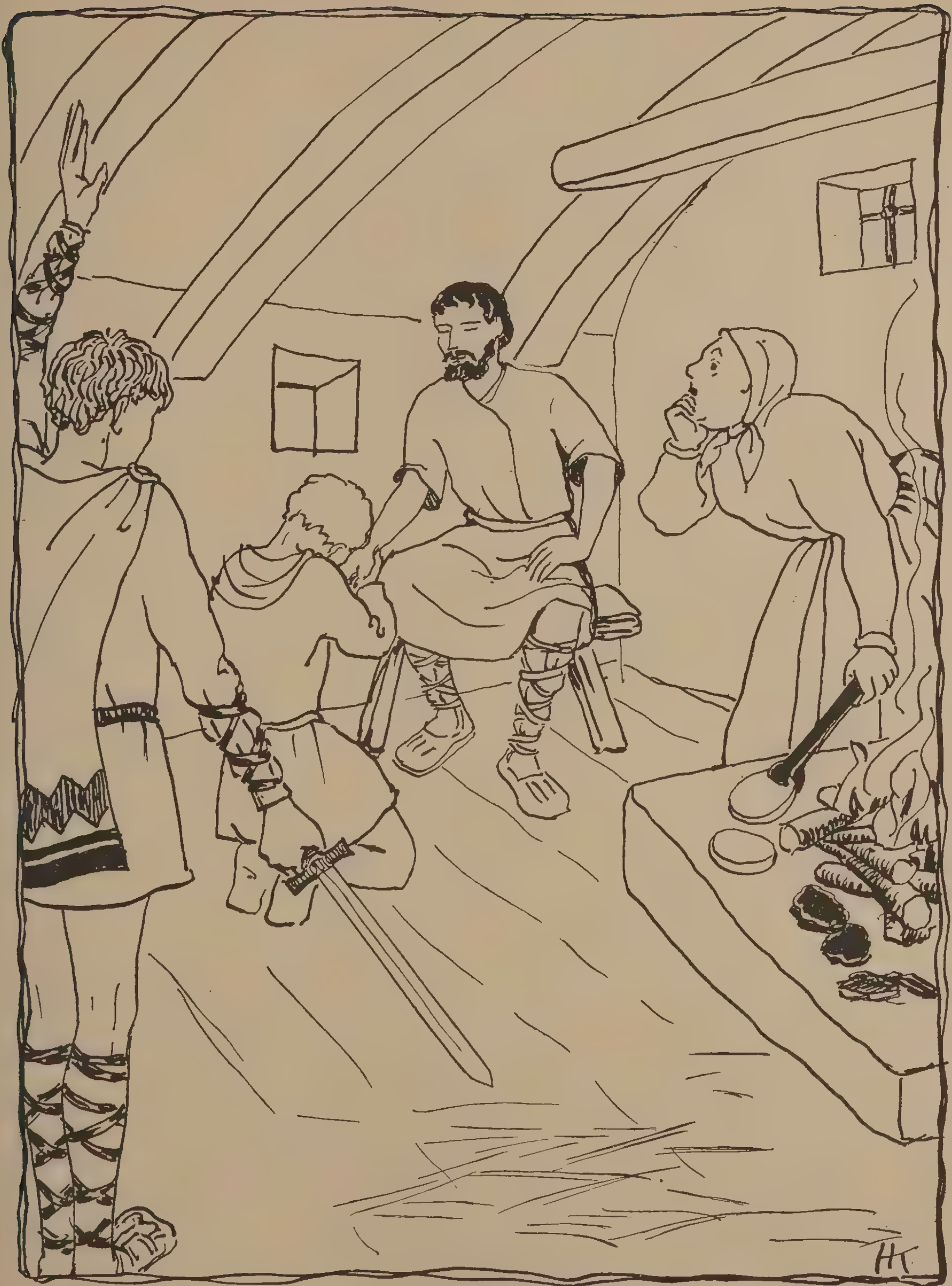


FIG. 28

King Alfred in the Peasant's Cottage

rather tired, and seeing a hut in the distance, he went to it, to see if he could rest and be safe from the Danes, who were around, searching for him. The hut belonged to a cowherd, and his wife was busy about her work. King Alfred went up, knocked at the door, and asked the good wife if he might rest awhile. She thought he was a common beggar, and did not receive him very graciously, but she had a kind heart and let him in. She was busy mixing the dough for some cakes. Some stones were her hearth, and she poured the cakes on to them. Then, turning to Alfred, she said, "Here, beggar, watch these cakes, and see they do not burn, while I go about my work."

He Lets the Cakes Burn

Alfred sat down on a log beside the cakes. He was thinking deeply, and forgot all about the good wife's cakes. "I *must* drive the Danes away," he said to himself. "I *must* find a way, somehow——" Then the good wife came back, and, looking down, she saw her cakes were burnt! She shook him angrily. "You lazy good-for-nothing," she cried, "you sit there idle and let the cakes burn, though I warrant you will be quick enough to eat them." In her wrath she picked up a faggot ready to beat him.

The tramp of footsteps was heard, Alfred turned, and there was the Danish Chief and his soldiers. "Has King Alfred passed this way?" they asked. Alfred's heart beat loudly within him. But the good wife, dropping her stick, said, "Nay! there is no one here but this idle, good-for-nothing beggar. I was just about to thrash him for letting my cakes burn."

At that the Danish Chief laughed. "We must search elsewhere," he said, and the enemy passed on. King Alfred was saved.

He is Safe

Presently some English soldiers came along; they were stepping warily, and their faces wore anxious looks. When they saw King Alfred they rushed towards him joyfully, and kneeling before him cried, "Your Majesty is safe."

"Your Majesty?" exclaimed the good wife in surprise; and then she realized to her horror that this beggar, whom she had scolded, was Alfred, King of England. She fell on her knees, and humbly begged for pardon. King Alfred put his hand on her head and said, "Nay, ask not for pardon, but rather must I thank thee for saving my life from the Danes." Later on, the Danes were driven from the land.

King Alfred was a good and kind king. He loved books and learning, and wanted all the people in the land to be able to read. He founded schools and built churches. He saved England from the Danes, and made the people build many long, swift ships to guard against attacks by sea. He is sometimes called "The Father of the British Navy."

Handwork. Let the children act the story of King Alfred in the good wife's hut. (*See Section, Plays for Acting.*) The children may model the cakes in plasticine. Each child can make a Viking ship from plasticine, using paper for the sails, and thin cardboard for the shields. (*See* page 664.)

4. ROBERT BRUCE AND THE SPIDER

IN the olden days, the Scotch and English each had their own King. They were often unfriendly towards each other, and had many fights and quarrels.

One King of Scotland was called Robert Bruce. He was a very brave man. At that time, Edward, King of England, wanted to be King of Scotland too, and so the Scotch and English fought many battles. Each time the English won.

Bruce was very distressed. Battle after battle was lost. Then he heard that Edward was marching up to Scotland with a larger army than ever. Bruce was in despair, and at length he was forced to flee to the hills, where he was hunted from place to place.

He Hides Himself

He found a lonely hut on the hillside, and here he hid himself. It was rough and tumbled-down, there were cobwebs in the corners, and his bed was a heap of straw on the ground.

One day he was lying in the hut thinking sad thoughts. "It is no use," he said to himself. "I am beaten every time." He had almost lost hope. "I think I had better give up trying any more."

As he lay thinking, he looked up, and there he saw a spider hanging by its long thread from the roof of the hut. It was trying to swing itself from one beam to another, to weave its web. It could not do it. Bruce watched. The spider tried again without success, then again and again. Bruce thought it surely would give up this time. He sat up and watched with interest. But no, the spider tried again. It tried six times, and each time it failed.

Bruce wondered, "Would it try a seventh time?" Eagerly Bruce watched the spider. Yes, it tried a seventh time; and this time the thread stuck fast and the spider made its web.

Bruce thought it over. The spider did not give up in despair; it went on trying until it succeeded. "I won't be beaten by a spider," said Bruce, "I, too, will try again."

Bruce Tries Again

He got up, and left his hiding place and once more gathered his army together. He marched them near a little stream called Bannock Burn. There was only one way by which the English could reach them, and that was by coming over some boggy land.

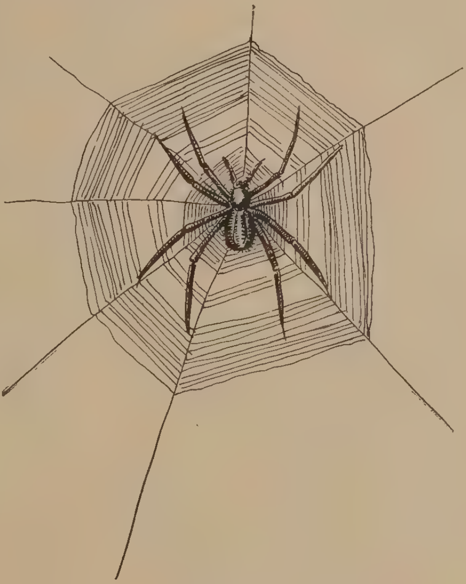


FIG. 29
The Busy Spider

Bruce had some pits dug, and covered them with turf, hoping to catch the English in these traps.

Early one Sunday morning the battle took place. Everything turned out as Bruce had planned. The enemy came galloping over the boggy land, and were caught in the traps. The Scotch won the battle, and the English returned home. Bruce was again King of Scotland, and was glad that he had not given in, but had persevered and been successful.

Handwork. Let the children draw pictures of King Bruce in the hut watching the spider. Make a plasticine model of a spider, and draw his web. (Fig. 29.) Write "If at first you do not succeed, try again."

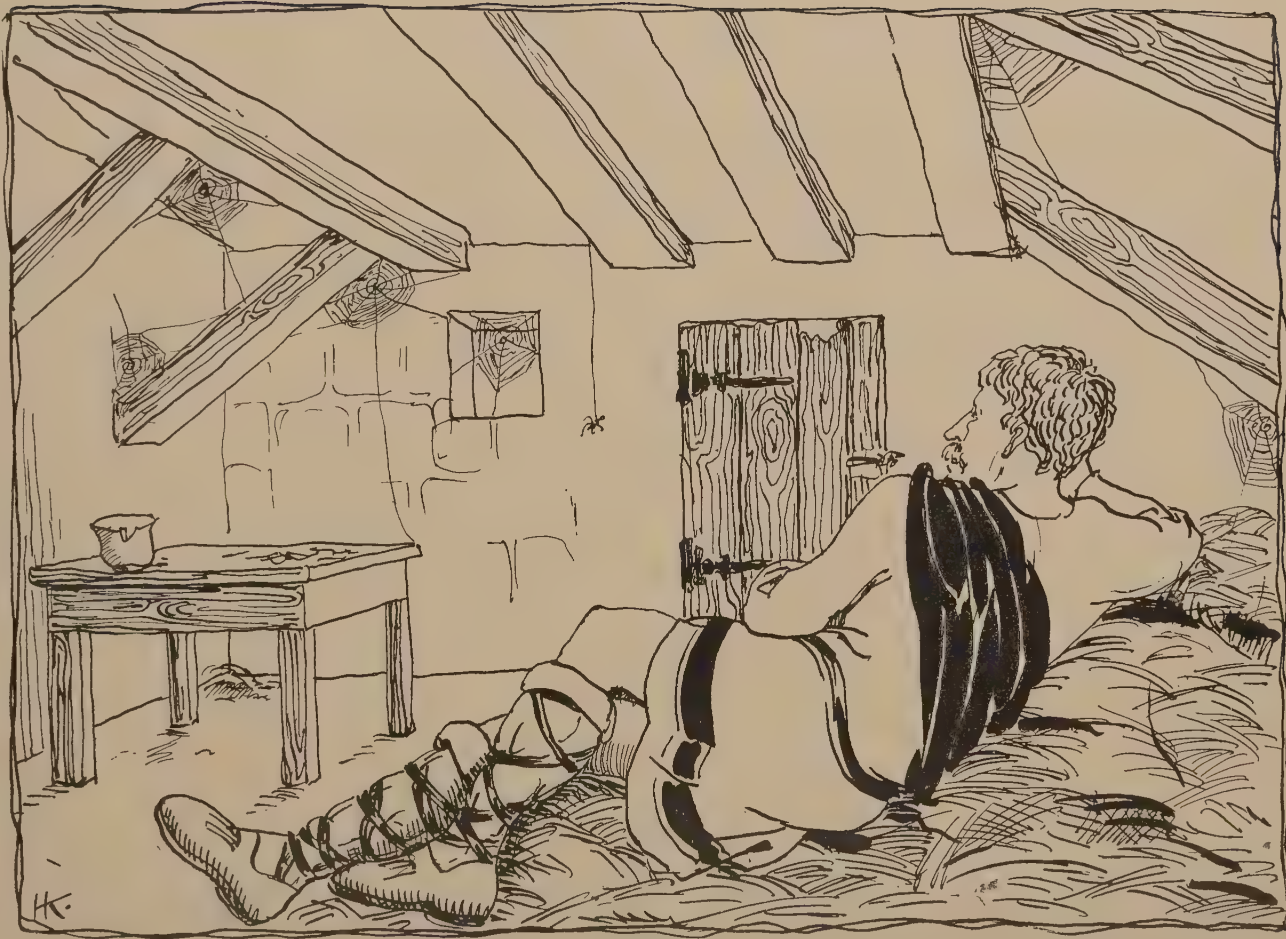


FIG. 30

Bruce Watches the Spider

5. JOAN OF ARC

THIS is a story about a very brave girl called Joan of Arc, who in the olden days helped France.

At that time the French and English were not friends, for the King of England wanted to be King of France, and so there was constant fighting, and for many years the French had a very unhappy time.

As Joan grew up, she often heard sad tales of the dreadful things that were happening. Once some English soldiers came to the village, drove away the cattle, and even stole the furniture from the poor people's cottages.

Joan's Home

Joan lived in the quiet little village of Domrémy. A slow river wended its way near the house, and close by was a small grey church. Joan was a simple little maiden. She had a sweet face and black hair. She was quiet, shy, and obedient. She spent her day spinning and helping her mother with the housework, and looking after the sheep.

She was a kind-hearted girl, and one winter night a poor man knocked at the door, just as the family were sitting down to supper. The man was starving, but Joan's father was about to send him away. Joan slipped shyly from her seat, and put her own bowl of porridge into his hand.

Afterwards they found out that the man was an old soldier, who had fought bravely for his country, so Joan was very pleased that she had been able to help him.

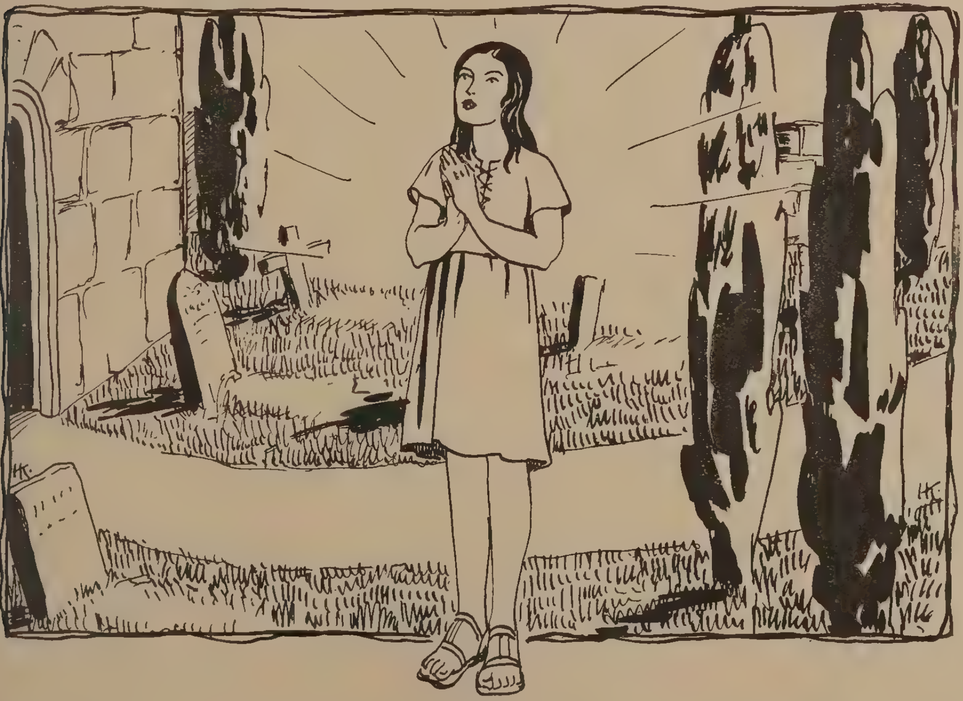


FIG. 31

Joan, When Still a Little Girl

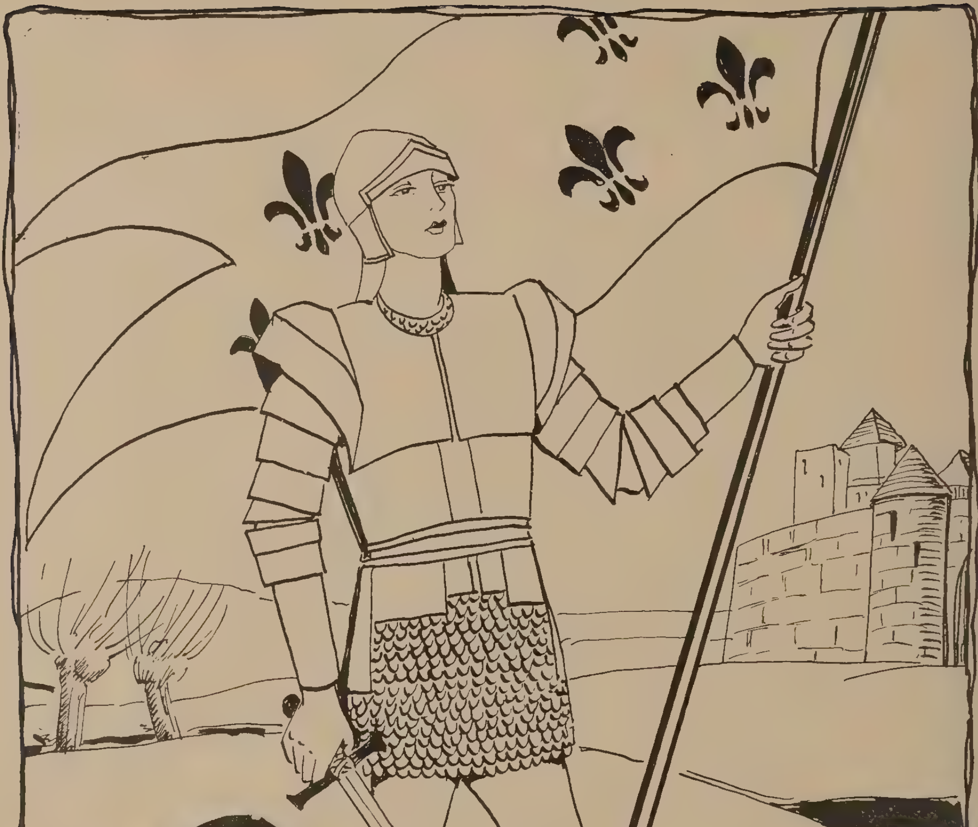


FIG. 32

Joan of Arc in her Suit of Armour

Joan was a good girl, and loved to go to church, and often she would wander to some quiet spot and would kneel down on some fresh green grass and pray to God to send someone to save France from the English.

Joan Hears a Voice

One summer's day, when Joan was about twelve years old, she was standing in the garden near the church, when suddenly a bright light shone around her and a voice said, "Joan, be a good child." Then the light faded away; Joan was a little frightened, but she did not tell anyone of her vision.

Some time later the vision came again, and the voice said, "Daughter of God, leave thy village. Go, help the King of France and restore him to his kingdom." "I am but a poor girl; I cannot even ride a horse," Joan said. "God will help you," said the voice.

After this, Joan began to spend more of her time in church, and she often thought of the Saints. Time passed on. Again the vision came to her and the voice said, "Daughter of God, thou shalt lead the Dauphin to Rheims, to be crowned King of France."

Joan was now sixteen, and she told her father and mother that she must obey the voices, and go to help the King of France.

At that time the English were besieging Orleans, and Joan made up her mind that she must go there to save it.

Her father and mother were very angry, and said it was ridiculous for a young girl to think that she could do that which strong soldiers were unable to accomplish. "You will disgrace the family," her father said. But Joan heeded them not, for she felt sure that God meant her to save France.

Joan Becomes a Soldier

She cut short her black hair, and, dressed as a boy, she set off.

She had never been on so long a journey before. She had great difficulty in reaching the Dauphin, to speak to him. The court was full of handsome lords and gorgeously dressed ladies. No one would take much notice of the poor peasant maiden.

At last she got a hearing, and the Dauphin said that she might lead the army to battle. So, clad in shining white armour, and riding on a black charger, with a white banner in her hand, and a sword at her side, she led the army to Orleans. Joan bravely fought in battles, and was victorious, and Orleans was saved.

The people of Orleans were overjoyed, and gathered around Joan, who had saved them. Shortly after this Joan led the way to Rheims, and the Dauphin was crowned King of France.

After this a very sad thing happened. Joan was taken prisoner by the enemy, and the King of France, whom she had helped, did nothing to save her. The English said she was a witch, and they burnt her in the market-place of Rouen. It was very sad, for she had been a good and brave girl, and had saved France. The people of France think of her with pride, and she is always remembered as Saint Joan of Arc.

Handwork. Write "Saint Joan of Arc." Make a sand tray model of Joan's home, putting in the house, the grey church, the river, and the fields, and Joan minding the sheep in the fields. Let the children draw pictures of Joan, clad in white armour (Fig. 32). Make her pennon.

6. PETER THE GREAT

THERE is a very large country called Russia. In the olden days Russia had very little sea-coast, so that it was not so easy for the people to trade with other lands. The Ruler of Russia, in those days, was called the Tsar, or sometimes "Little Father."

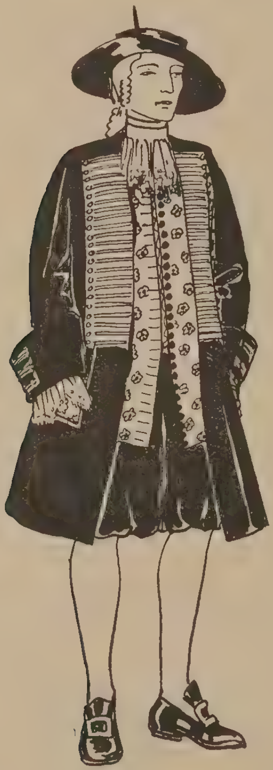


FIG. 33

Peter the Great in Clothes of his Period

There was one Tsar who was called Peter. He was brought up in a beautiful palace, amid great luxury. When he was a baby, he slept in a cradle covered with velvet embroidered with gold. He had robes of satin trimmed with pearls, and when he was about three years old he rode in a little golden carriage.

One day, when he was a boy, he found an old, half-rotten boat left by the edge of a river He went up and examined it. An old peasant who happened to be passing at the time called out, "I can remember when your great-uncle used to sail down the river in that boat. He could sail against the wind, too." When Peter heard that, he made up his mind that he, too, would learn to sail against the wind. So he went about searching for someone to teach him. But the Russians knew very little about ships, as they possessed very few. They knew neither how to build nor sail them. But Peter had made up his mind to learn and went on searching, till at last he found a teacher who taught him to sail the boat. This was really the beginning of his Navy.

Peter Travels in Other Lands

When Peter became Tsar, he wanted to help and improve his country. He knew it would be a good thing for Russia to own some sea-coast and big ships to carry goods to trade with other lands. So Peter went on a journey through Europe, to learn as much as he could.

The chief thing that Peter wanted to learn was to build ships. He wanted to learn and do the work himself.

The Dutch were a great sea-faring nation, and had splendid ships, so Peter set out for Holland, and early one morning he arrived at a Dutch seaport. He met some Dutch workmen and went with them to lodge in their cottage. It was a small wooden cottage, very bare, and it had a wooden cupboard, and there a mattress was put to be Peter's bed.

Peter dressed himself up as a Dutch sailor. He wore wide breeches, a short jacket, and a red waistcoat, with large buttons. He bought himself a set of carpenter's tools, and set to work in real earnest.

He is Recognized

After a time, people found out that this man, working as a labourer in the dockyard, was Peter, the Tsar of Russia, and crowds gathered round to watch him. Peter did not like this,

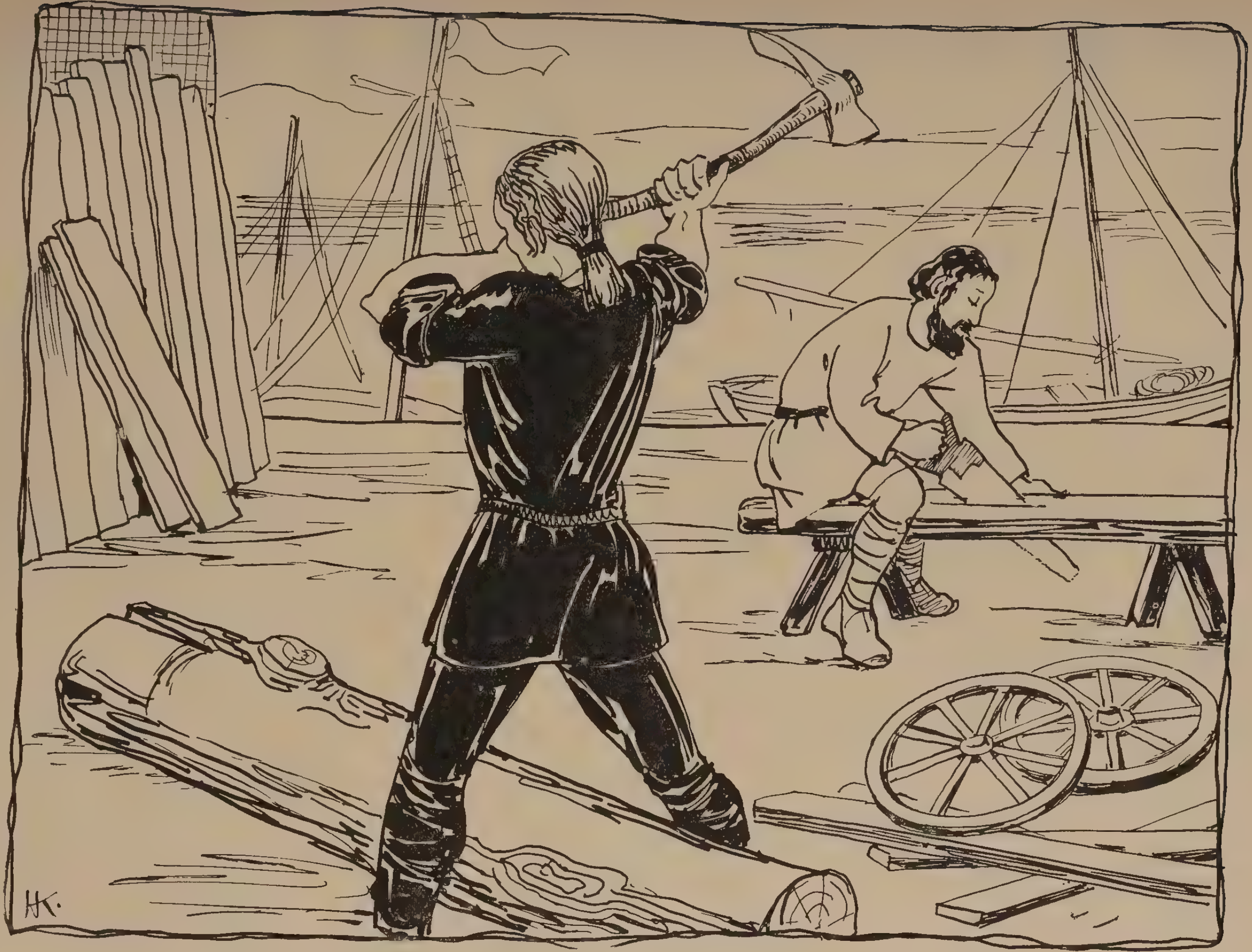


FIG. 34

Peter the Great Working in the English Dockyards and one day he ran away to another town called Amsterdam. He took a lodging there by himself. He had to get up early, light his own fire, and cook his own breakfast, before he went to work in the dockyard. He helped to build a ship from one end to another. When the ship was finished, and Peter was returning to Russia, the ship was given to him as a present from Amsterdam.

Peter also spent some time in England, working in a dockyard near London. In his spare time he would often row and sail on the River Thames; and in this way he learnt how to manage a boat.

Peter was very eager to learn all he could, and he always kept his eyes wide open. He was rough in many ways, and not at all like a king in his manners. Many are the tales told about his funny ways and doings.

His Strange Ways

At a dinner party, when he was too hot, he just threw off his coat and sat without one! But he wore a waistcoat. He was the first man who ever wore a waistcoat.

One day, when out walking, he saw a lady coming towards him. "Halt!" he shouted to her at the top of his voice. The lady stopped in surprise. Peter caught up her watch, which was hanging at her waist, looked at it, put it down, and passed on without another word. He had merely wanted to know the time!

Another day he was riding in his carriage, his eyes wide open as usual to learn all he could, when he suddenly ordered his coachman to stop outside a house they were passing. "I want to know how the people in this house live," he said. He made the owner go outside, and he went in and examined everything inside.

Another time, he waded across a marshy field, knee-deep in the mud, because he wanted to see a mill.

When Peter left England, it was said that he gave the King a magnificent uncut diamond, wrapped up in a dirty piece of paper, which seems a funny way for one king to give a present to another king.

Peter Returns to Russia

When Peter returned to Russia, he set to work to make great changes in the country. He built schools and factories. He put up a printing press, and built mills for the manufacture of paper. He made good roads, and he also set to work to build his Navy. Later on, he was able to win for Russia part of the sea-coast, and at the mouth of a river he built an important town that used to be called after him, St. Petersburg.

Peter did a great deal to improve and help Russia. He was loved by the people, and is always known as Peter the Great.

Handwork. Drawing and colouring any part of the story. Making plasticine models of Peter the Great, making a ship. Draw a map with roads. (*See Local Geography*, page 717.)

STORIES ABOUT PEOPLE WHO HAVE HELPED OTHERS

1. ST. FRANCIS
2. ST. BERNARD
3. COLUMBUS
4. HANS, THE LITTLE DUTCH BOY
5. ABRAHAM LINCOLN
6. GRACE DARLING

1. THE STORY OF ST. FRANCIS AND THE WOLF

ABOUT seven hundred years ago, there lived in Italy a boy named Francis. He lived in a strange little town called Perugia, on the top of a hill. There were mountains and green valleys around. The skies were blue, and the sun shone so brightly that everything seemed to laugh in the sunlight. The birds sang merrily, and the people sang as they went to and fro.

Francis's father was a cloth-merchant and rich. He sold fine embroideries, velvet, and other beautiful stuff. Francis was a handsome little boy with dark hair and dark eyes. He was merry, and full of fun, and had many friends. He was kind and gentle too, and loved all the birds and animals.

When Francis grew up, he gave up his riches and fine clothes and went about to preach and help the poor. He wore a plain brown garment, with a rough cord round his waist, and his feet were bare. Thus he walked along the roads from village to village.

He had such a sweet face, and was so good, that everybody loved him; and soon he was known all over Italy and was called Saint Francis.

He Loves all Animals

As Francis wandered from place to place, he would stop and talk to the birds and animals, for he loved them. When he whistled, the birds would come flying down and sit on his finger. He noticed the rabbits, and horses, and donkeys; and no dog, however fierce, had been known to snap and snarl at him.

In those days terrible wolves lived in these lonely places. They would come from their dens to the towns, and terrify the people.

One day, Francis went to stay in a certain town. He found the people in a state of terror. A fierce wolf had appeared in the neighbourhood. He had a shaggy grey coat, and was of an enormous size. He was the fiercest wolf they had ever known, and he made great ravages on the town. He attacked the farms and carried off the sheep and lambs; but, what was worse, he was so bold that he came quite near to the walls of the town. If there were any travellers about, he fell upon them and killed them. Sometimes he even took the little children who had gone out to play, or to gather berries.

The men went out with their knives and spears and dogs. But the fierce wolf was too much for them. He killed not only some of the dogs, but some of the men too, and they had to flee in terror. No man dare go out to attack him.

St. Francis Hears of the Wolf

The people in the town were terrified. They hardly dared to go outside the walls, and mothers had to keep their children near them.

When Francis heard this, he was very sorry for the people. "I cannot stay here," he said, "and let the terrible wolf frighten the people in this way, and carry off their sheep and lambs and little children. I must go out to the wolf and talk to him."

"No! no!" the people cried in terror. "Do not do that. The wolf is bold, and fears no one. He will surely slay you."

But Francis was not afraid. He set out, a great crowd following as far as the town gates, then they stopped to watch, for they dare go no farther. All alone, Francis wended his way

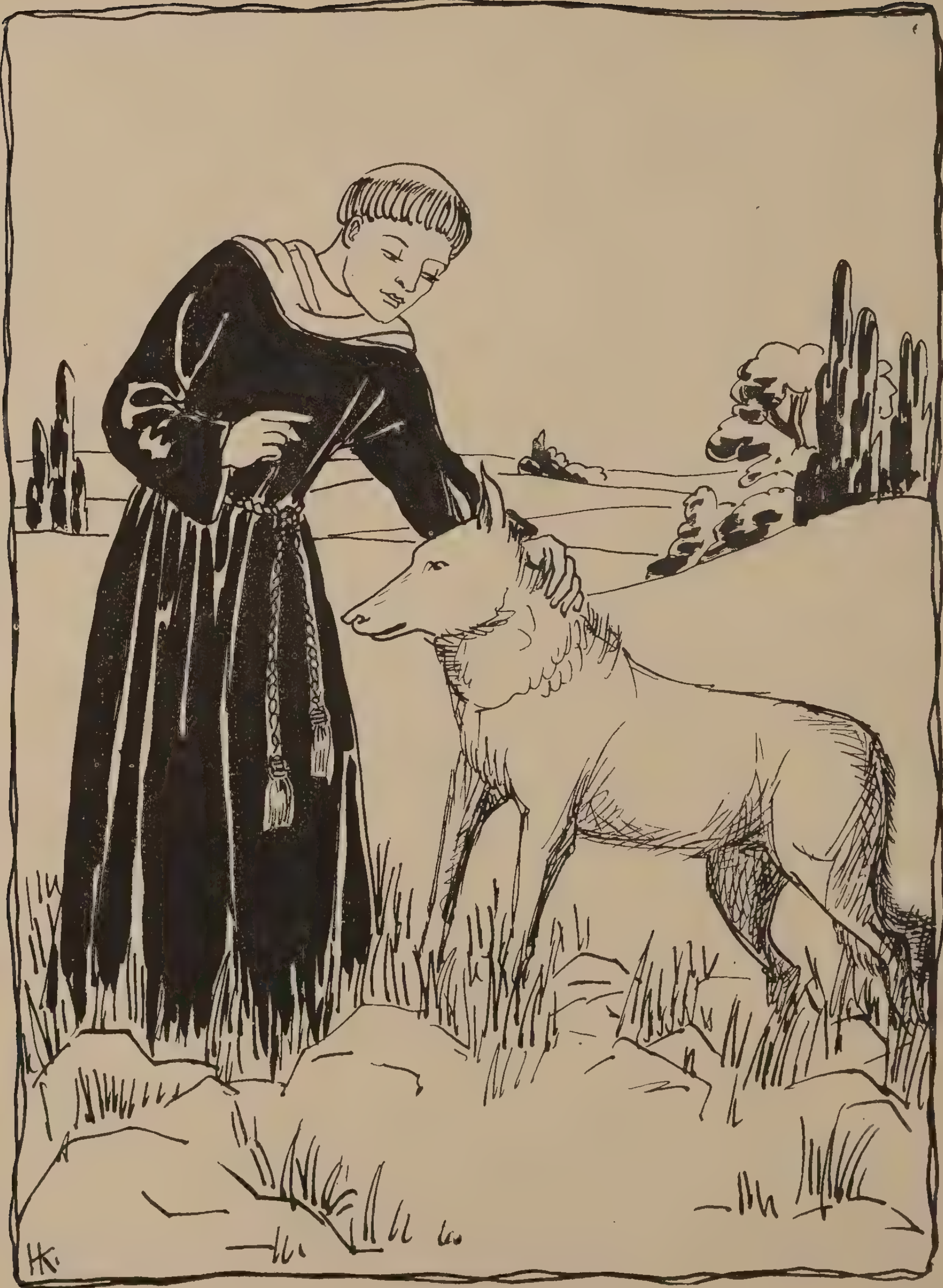


FIG. 35
St. Francis and the Wolf

across the field to the thicket where the wolf had his den. Presently he saw the wolf slinking along among the trees. He really was a terrible beast, huge and fierce, with his long, sharp, white teeth, and his red tongue hanging out. He looked hungrier than ever.

The wolf came trotting towards Francis, with glaring eyes and ready to leap on him. But Francis walked calmly towards him. The wolf was so surprised, he stopped and looked. Then Francis spoke to him in gentle tones. " Brother Wolf," he said, " I have not come to hurt you, but to talk to you." His voice was so kind and friendly, that the wolf came nearer. Francis patted him gently on the head, and the wolf lay down on the ground at his feet, as though he were a friendly dog and not a fierce wolf.

Francis Speaks to the Wolf

Francis said, " Brother Wolf, you have done much harm and evil here. You have stolen lambs and sheep, and have killed men and women and little children. You ought to be hanged for a thief and a murderer. The people all cry out against you. I know it is because you are hungry, and I want to make peace between you and the people. If I promise to see that the people always give you food, will you promise to do no more harm ? Will you promise ? "

The wolf wagged his tail. Francis put out his right hand, and the wolf lifted up his right paw and put it in Francis's hand as a sign of his promise.

Then Francis, followed by the wolf, went back to the town. The townspeople watching at the gate could scarcely believe their eyes. The fierce wolf was walking gently beside Francis. They walked up to the market-place. The crowds gathered around. Francis, with one hand on the wolf's head, said—

" My brothers, will you promise to give Brother Wolf food every day ? " The people cried, " Yes, we promise."

Then Francis said " Brother Wolf, will you promise to do no more harm ? " The wolf wagged his tail, and again put his right paw in Francis's right hand, to show that he promised.

After that the people lived happily in the little town. They fed the wolf daily, and the wolf became tame and gentle, and went from house to house like a friendly dog and played with the children.

The people now loved St. Francis more than ever, and thought how wonderful and good he was.

Handwork. Paper cutting or tearing of the wolf (*see* page 541). Make St. Francis's tunic and girdle from odd pieces of material (Fig. 35). Make a hill (*see* page 746) in plasticine, to show where St. Francis lived.

2. ST. BERNARD

Once upon a time there was a man called Bernard. He lived in a far country where there were beautiful pine forests and high mountains capped with snow. Bernard's father and mother were very rich, and Bernard had every luxury that money could buy. He lived in a grand house, with many servants to wait on him. He wore splendid clothes and had a fine horse. When he rode over the slopes of the mountains, he would often see the poor people trudging wearily along the hot and dusty roads, bearing their heavy burdens.

He felt sorry for them; they looked so tired, and often they were hungry and their clothes were thin and tattered. "They have so little and I have so much," he said.

His father and mother wanted him to be a great prince and marry a rich and beautiful princess. Bernard did not want to. "Nay," he said, "I would rather go away and help the poor." His father and mother took no notice, and a day was fixed for his wedding.

Bernard Leaves His Home

Poor Bernard was very sad. So the day before the wedding he wrote a letter to his parents, telling them that he had decided to give up all his riches, and to go away and work for the poor. He left the letter on the table and went away.

He went up among the mountains, and there he spent many years doing kind deeds. He nursed the sick and comforted the people in their sorrows. Often he had long journeys to go on foot over the mountain passes, which, in winter time, were thick with snow.

Bernard lived near a very long and lonely road that led over the top of a high mountain. Many travellers had to pass that way. Sometimes the snow was so deep that they missed their path and got lost. Sometimes, when there was a snow-storm, they could not fight the blizzard and lay down in the snow in despair. Frequently they were robbed. Many would have died had not Bernard found them.

He used to take a big dog with him. The dog would run on in front and scratch in the snow. Then he would bark loudly, and Bernard would hurry to the spot, and there he would find a lost traveller, half-buried and nearly frozen to death. Bernard then took the traveller home and cared for him.

He Builds a House

One day, Bernard had a wonderful idea. He decided to build a house on top of the lonely mountain road. "Every night I will put a light in the windows," he said, "and it will shine forth over the snow, to tell the travellers that here is warmth and shelter for them."

The house was built and was called a hospice, and there Bernard and his friends dwelt together like brothers. They had twelve dogs to help them to find the lost travellers in the snow.

Every day Bernard and the brothers and the dogs went out searching the snowy mountain roads. The door of the hospice was always open, ready to receive, and welcome, all who were in need of food and shelter.

The dogs wore big collars round their necks, and attached to each collar was a little barrel containing food and drink.

The dogs would go out on the snowy mountains. Everywhere was white, and there would be a deep stillness around. Nothing would be heard except the scratching of the dogs. Then they would find some man or woman lying half-buried in the snow and too exhausted to go any farther. The food in the little barrel was just enough to revive them until the barking of the dogs brought one of the Brothers to the rescue.

His Parents Find Him

One day an old man and an old woman knocked at the door of the hospice. They said to Bernard, "We have lost our only son. We wanted him to live a gay life in a grand palace, but he went away to help the poor. We now know that he did right, and we want to see him. We have wandered miles and miles over the countryside and mountain tops. Do you know

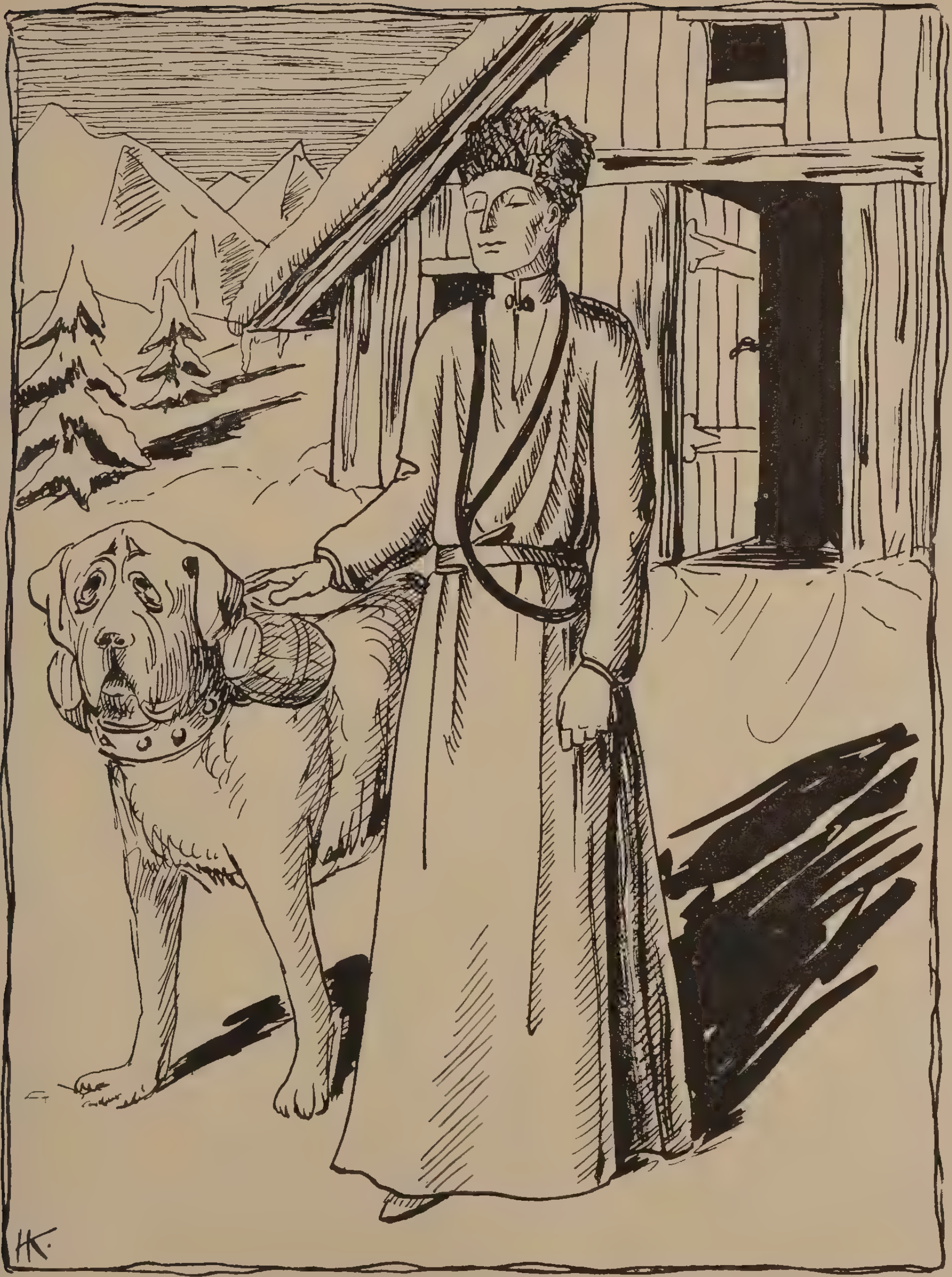


FIG. 36
St. Bernard with his Dog

anything about him ?" Then Bernard knew that it was his own father and mother. "Yes," he answered in a low voice, "I am your son."

His father and mother were overjoyed at finding him. Now they were very glad that he was not a grand prince, because they were so proud of the noble work he was doing, and they went back happily to their own home.

Years after Bernard died, and because of his noble work, he is remembered as Saint Bernard. The St. Bernard Hospice still stands on the mountain top in Switzerland. The door is always open, ready to receive travellers, and other Brothers live there now, with the big St. Bernard dogs to help them.

Handwork. Make a co-operative model in the large sand-tray. The teacher should paint a background of the snowy mountains. Cover the sand with cotton wool to represent snow. Dolls should be dressed to represent St. Bernard, and the Brothers, and the people. Dogs should be cut out of thin cardboard, or stiff drawing paper. A cardboard box can be made into a house. (*See* page 386.)

Make plasticine models of the St. Bernard dogs, with barrels round their necks. Free paper cutting and drawing. Act the story.

3. THE STORY OF CHRISTOPHER COLUMBUS

THIS story is about Christopher Columbus. He was a great sailor and was the first man to find America. He lived long ago. Printing had been invented, and people had begun to read books on travels, and read about foreign lands. They were also building better ships, and were becoming great travellers. One country that was much sought after was India, away in the east, for beautiful silks and cottons and jewels and spices were to be had there. The journey to India was a dangerous one, for it lay through countries where there was much fighting.

Christopher Columbus loved the sea, and he loved to read books about the sea, and ships, and travels. He learnt from his reading that the world was round; whereas most people in those days thought it was flat.

When he was a young boy, he became a sailor and visited many far-off lands. At last he began to think out a plan. As the world was round and not flat, he was quite sure that he could sail to India by going west instead of east, and so avoid passing through the dangerous lands. He thought he would like to try to sail that way. He did not know that America lay between; nobody did, as they had never heard of America in those days.

He Collects Money for the Journey

Columbus was very poor, and for the journey he needed money and ships, so he set about to try to get money. He took his little son Diego with him, and together they started out walking from town to town. They had no home and were often tired and hungry.

One day they came to a monastery. Columbus knocked at the door to beg food and shelter. The good monks took them in, for they saw that Columbus and his little son were in need of food and rest.

Columbus told his plans to one of the monks. "I want money and ships," he said, "because I want to sail to India, where such rich treasures are to be found, and I know that I can get there if I sail to the west, for the world is round." The monk was interested and advised Columbus to go and ask the King and Queen of Spain to help him.

This Columbus did. The King and Queen listened to his story. It seemed almost like a fairy tale. They called all their wise men together. But the wise men said, "Go to India, in the east, by sailing west, impossible!" and when Columbus said that the world was round, *not* flat, they burst out laughing and did not believe him.

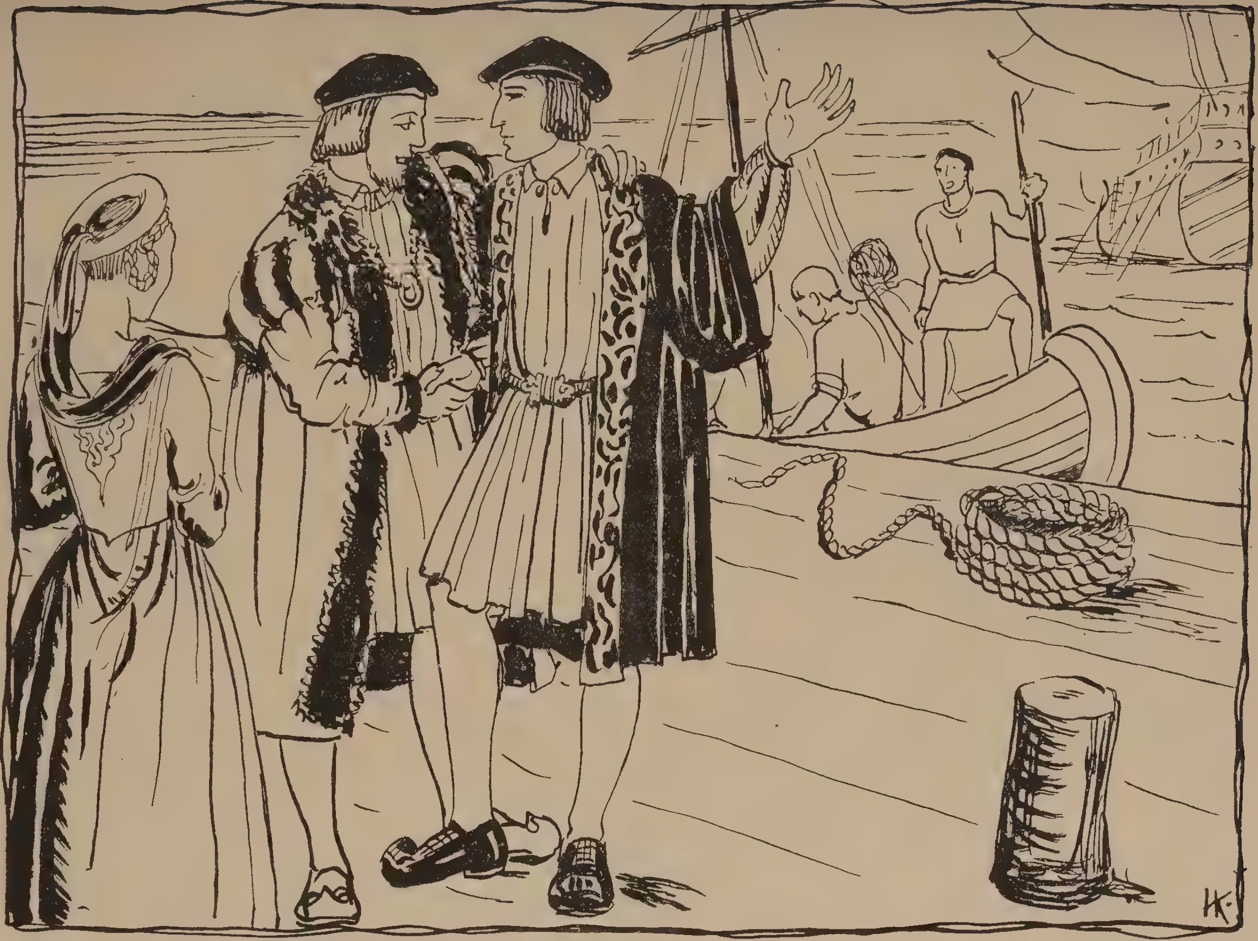


FIG. 37

Christopher Columbus says "Good-bye" to his Friends

Columbus was disappointed, but he did not give up trying, and at length the Queen of Spain promised to lend her aid to the expedition. So one happy day Columbus set sail with three wooden sailing ships. It was not easy to find men to go with him. It was a long voyage over the wide ocean. No one had been before, and they did not know the way.

Columbus Sails West

Day after day they sailed, with sea all around, and no signs of land. Sometimes the skies were black, and the sea rough and stormy, and the ships rolled and tossed in the mighty ocean. Still they sailed on. The weeks passed by; there was still no sign of land, nor any living thing.

At last the sailors grew tired and cross and grumbled, "We will go no farther," they said. "There is no land here. We will turn and go home. We do not want to die on the ocean."

But Columbus did not give in. He cheered them up, by speaking brave words, and told them what a fine thing it would be if they were the first people to find that way to India. So they sailed on again.

Then, one day, some birds came singing about the ship. Some weeds were seen in the water, and a branch of thorn with red berries on it floated towards them on the sea. They knew that land was not far off. Now all became eager. They all kept a sharp watch. At last, one morning, two months after they left Spain, the looker-out cried, "Land! Land is in sight!"

They Reach Land

Next day they came to a small island. There were men and women on the island. They were tall and strong. They wore no clothes, and their skins were red-brown in colour. They were Red Indians. Columbus thought he had reached India; that was why he called them Red Indians, but, without knowing it, he had come to one of the islands of America. That was how Christopher Columbus discovered America.

Clad in scarlet robes, he planted the flag of Spain in the ground. He made friends with the Red Indians, and gave them presents, and they in return gave the sailors parrots.

Columbus sailed back to Spain and told the people that he had discovered a land that was quite unknown to them, and they were very proud of him.

Handwork. Let the children write "Christopher Columbus sailed to America." Draw a picture of the ship (Fig. 17, page 650). Make a sand-tray model of Columbus landing in the West Indies. Blue paper for the sea. Ship. (*See* page 650.) Wigwam from paper. People can be drawn and cut out of paper.

4. THE STORY OF HANS, THE LITTLE DUTCH BOY

HANS was a little Dutch boy who lived many years ago in Holland. The country where he lived was very flat and marshy, and in many parts was lower than the sea.

The rough waves from the North Sea would come rushing over the land, and the great rivers rolling through the country would overflow their banks. The people had to leave their homes, as they were flooded out. The Dutch people had hard work to fight the waters and keep them back, so that they might dwell safely in their homes.

The Great Dykes

They built great mounds, called dykes, to keep out the sea. They dug canals to direct the course of the rivers. If the dykes were broken down, the sea would come rushing through. So the dykes were carefully watched, and every hole had to be mended immediately.

Every man, woman, and child in Holland knew the importance of the dyke. Little Hans knew it, too.

One morning Hans went to school as usual. He was returning home in the late afternoon, by himself. His satchel of books was on his back, and he was walking along by the dyke.

Presently he stopped. What sound was that he heard? There was the roar of the wild sea. But there was something else—a different sound. It was a sound like the trickle of running water. Could there be a hole in the dyke? Hans knew that the least crack would let the water through, and it might break down the dyke, cover the land and ruin the people's homes.

He ran to the dyke to look. There he saw a small hole—through which the water had already begun to trickle.

Hans was a long way from home. The hole was only a tiny one. Should he run and tell someone? But it might be too late; if the water went on running, it would make the hole larger and break up the mound. It was getting late. Hans was tired after his long day at school, and he was hungry. But he did not think of himself. He only thought of saving the land.

Hans Stops the Hole

Hans put his satchel down on the ground, stooped down on the cold, damp mound, and put his hand into the hole. His hand was just big enough to fill the hole and stop the water. His mind was quickly made up. He must stop the water till someone came.

There the little boy stayed all through the evening. The sun set. Someone would surely come soon. The evening wore on, and it grew darker and darker, but the little boy stuck to his post. Hour after hour passed, and the night grew cold and the air damp and chilly. There was silence all around, except for the murmur of the night winds, and the splashing of the sea upon the shore. Hans began to grow cold and frightened, and he was tired and hungry. His hand ached, and he had cramp; and so the long night hours passed by.

At last Hans saw little streaks of light across the sky. Dawn appeared, and the sun rose. Hans knew that his lonely watch must soon end now.

Presently he heard some footsteps. Some workmen were coming; nearer and nearer they came. By the dyke they found the brave little Hans, cold and tired, crouching on the ground, with his hand still thrust in the hole. The tears on his cheeks, and the piteous tone of his voice, told them how hard little Hans had found it to keep to his post all through the dark night.

Hans Goes Home

One man saw to the mending of the dyke and the other took Hans home to his anxious parents, and when the work mantold them what Hans had done, they were very proud that their little son had had such pluck and courage.

Now the Dutch people employ men whose special work it is to watch the dyke; but the tale is still told of how little Hans saved Holland from being flooded by the sea.

Handwork. Let the children cut out and colour a picture of a little Dutch boy. Make a model of the story in the sand-tray. The dyke can be built up with the sand, blue paper can be used for the sea, and a windmill made out of a match box. (*See* page 135.)

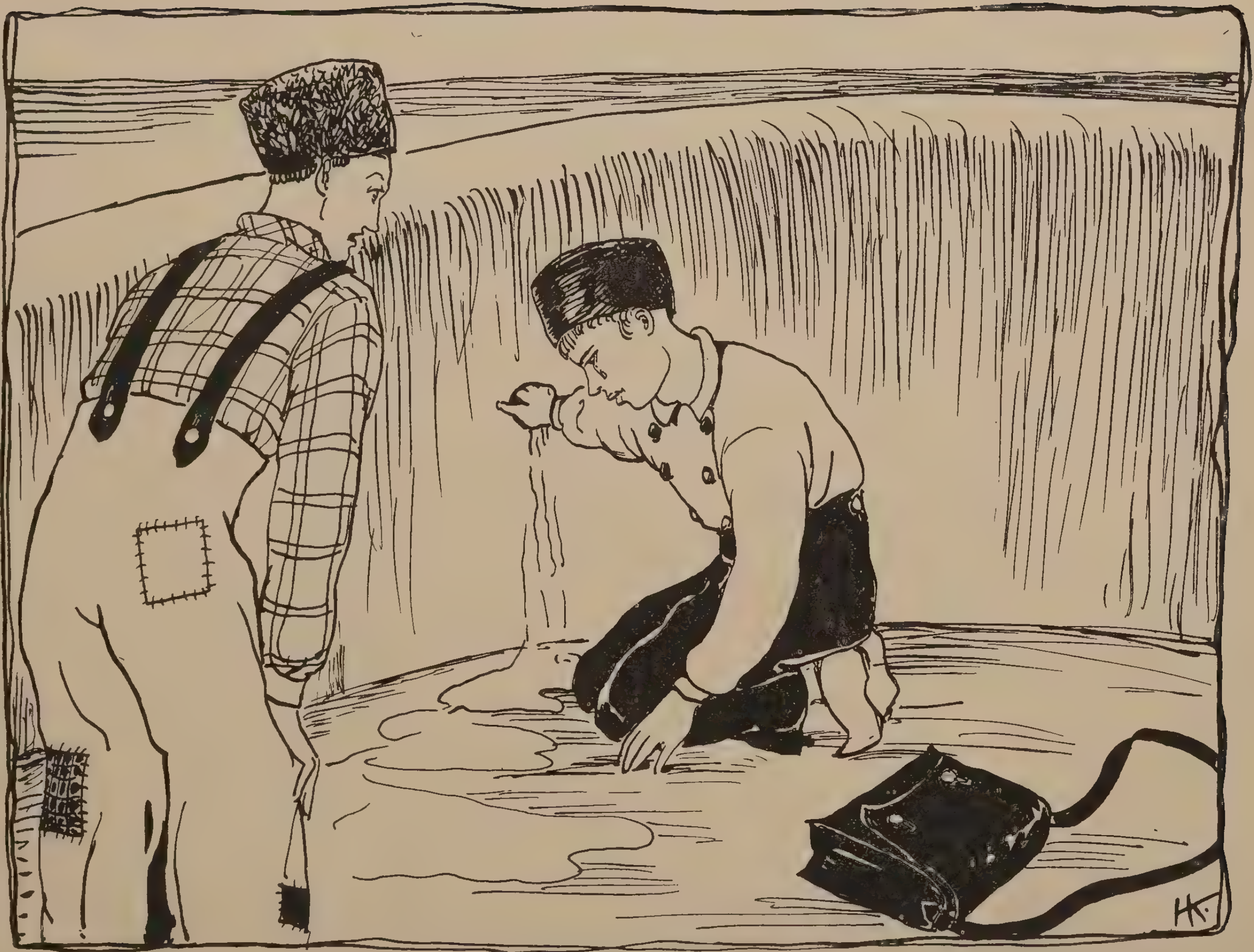


FIG. 38

The Workman Finds Little Hans in the Morning

5. THE STORY OF ABRAHAM LINCOLN

AFTER the discovery of America, people from all nations sailed across and settled there. They did not have a king, but chose the best man among them to be President.

Amongst the English people who settled there was a man called Samuel Lincoln, and his great-great-grandson Abraham grew up to be one of America's greatest and kindest men.

Abraham Lincoln was born over a hundred years ago, in an uncomfortable little log cabin in the backwoods of America. Red Indians lived around, and life was not very easy, but was often full of dangers.

Abraham's Home

Abraham's father was poor, and the hut was very roughly built of stout logs cut down from the forest, and put one on top of the other. There was only one room. The chairs were three-legged stools, and the table was roughly made of wood. There was no proper door, but there was an opening, in front of which hung a deerskin curtain. There was a loft up in the roof, and this was Abraham's bedroom. Every night at bedtime, Abe (as he was always called) and his sister had to climb up a shaky ladder to bed. They slept on a bed of dry leaves, with a deerskin for covering, and they had to huddle together at night to keep warm.

The winters were very cold, and icy winds blew. The children would crouch together on a skin rug in front of the fire, and sometimes their mother would tell them stories about the Red Indians, or from the Bible.

As Abe grew up, he learnt to make himself useful. He was a very tall boy, with very long legs and arms, and large feet and hands. He had a rough, black mop of hair that never would lie straight. He wore a coarse linen shirt and deerskin trousers, and a coarse leather belt around his waist. He had no stockings, but wore moccasins.

He learnt to use an axe, and instead of going to school, he would go into the forest to chop wood, to earn his food. The Lincolns were very poor, and Abraham hardly ever went to school at all. His mother taught him to read, and do sums, and that was all the teaching he had.

Abraham's Lesson Book

But he was very eager to learn. There were no exercise books or paper, nor were there pens and pencils in this poor log hut, away in the backwoods of America. But Abraham was determined to learn. So in the evenings, when he sat by the fire, he would pick up his father's large wooden shovel and on this he used to write! He would take a glowing twig from the fire, and tap it on the floor till the glow had died out. Then he wrote with the black, burnt end of the twig on the wooden shovel. He would do bits of writing from the Bible, or Aesop's Fables, and he would work sums When he had filled the shovel with writing, he took a knife, scraped it all off, smoothed it down, and so had a clean sheet to start again.

So eager was young Abe to learn to read and write, that sometimes he wrote on the log walls of the hut, with a piece of chalk or charred wood.

He had very few books to read, perhaps half-a-dozen, and most of these he had to borrow. Sometimes he walked miles to borrow a book to read. On one occasion a book he had borrowed was accidentally left out of doors in the wet and got damaged, so he had to work for three days cutting corn for a farmer, to pay for the book.

He Grows Up

Abraham Lincoln grew up to be a very tall man; he was 6 ft. 4 in. in height. He was also very strong. He could carry heavier weights than anyone else. Once, when three men were standing still, wondering if they could carry a pair of logs between them, Abe came up, picked up one under each arm, and marched off with them.

When he was grown up, he set off to seek his fortune. One day he went into an auction room, and there he saw a sight which saddened his kind heart. There, in the auction room, standing waiting to be sold, were some negro men and

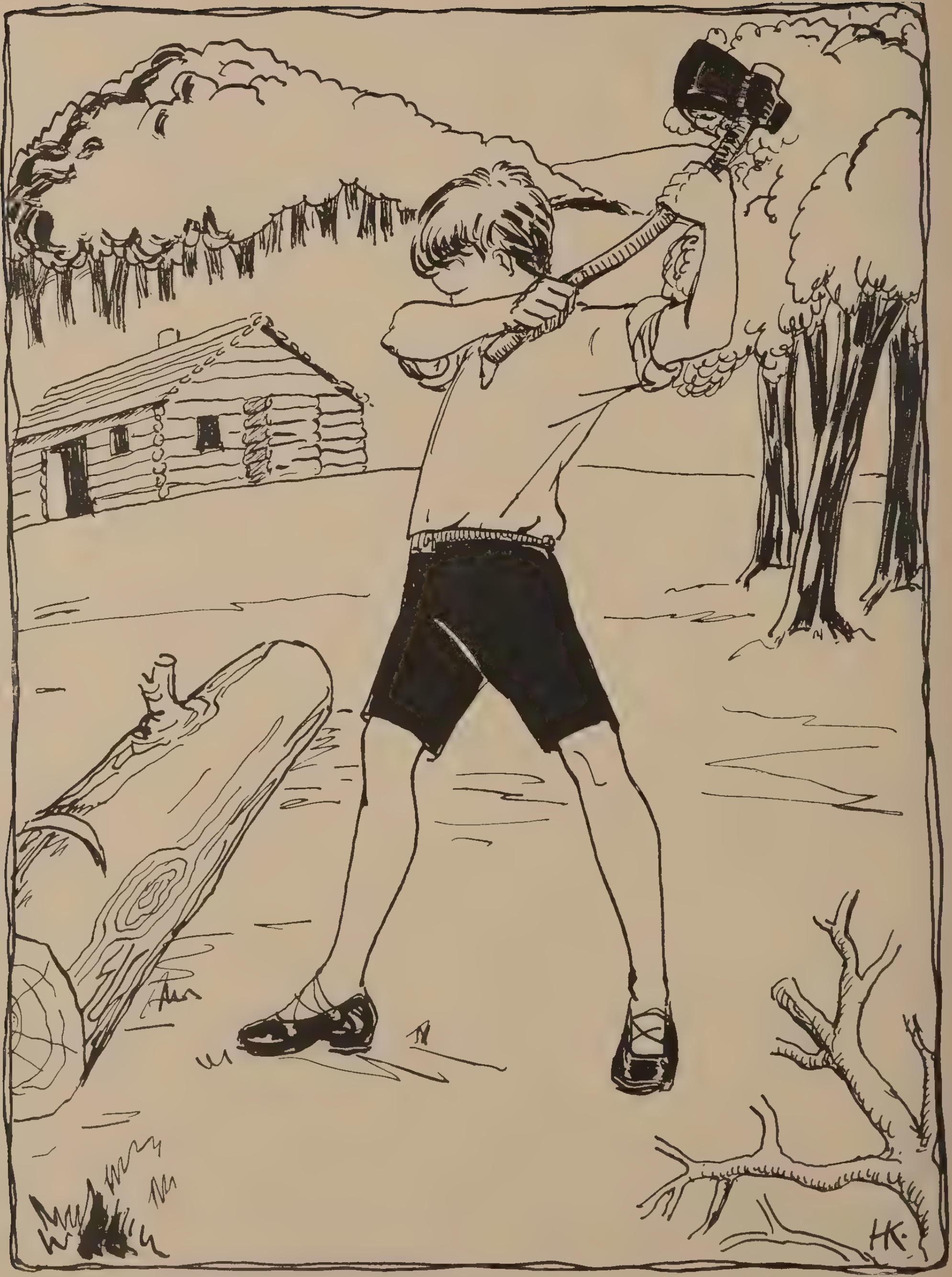


FIG. 39
Abraham Lincoln Learnt to Use an Axe when a Small Boy

women and even little children. For in those days the poor black people were bought and sold, just like animals, and often their masters would make them work too hard and ill-treat them. Abraham Lincoln was very sorry for them. " It is not right," he said, " the poor black people should be treated thus. They should be free as we are. When I get a chance to hit slavery, I will hit it hard."

He Works at Many Trades

So he set out, filled with the determination to work hard to free the slaves. He went away, and began to read more books. There were many ways he found to earn his living while he was learning. He was a soldier, a postman, a lawyer, and at one time he served in a shop. Some customers were very amused, one day, when they went into the shop and found Abraham lying full length on the counter, with his heels kicking in the air, while he was studying from a very hard book.

People liked to gather around him to hear him talk and tell funny stories. He began to make speeches, and talk about the poor black slaves.

At last he was made President. He worked hard and was always helping his fellow countrymen. While he was President, the slaves were set free, and Abraham Lincoln always is remembered as one of America's greatest men.

Handwork. The teacher should procure a piece of wood, and some charred twigs, and let the children attempt to write letters or words. Make a log hut from twigs held together by plasticine. Cut out and colour some black people to be slaves (Fig. 12, page 698).

6. THE STORY OF GRACE DARLING

NEARLY a hundred years ago, there lived, in the north country, a little girl named Grace Darling. She lived by the sea, where there were many islands, and where the coast was very rocky and dangerous to sailors, for ships might easily dash against the rocks and be wrecked.

On one of these rocky islands was a lighthouse, and here Grace lived with her mother and father. Her father was the lighthouse keeper. At the top of the tower there was a room with windows all around, and in the middle hung a lamp. Every evening the lighthouse keeper would mount the steps and light the lamp, and it shone far out to sea, showing the sailors where the dangerous rocks were.

There were no roads or streets on the rocky island where Grace lived, and no houses except the lighthouse. When Grace wanted little girls to play with, or when her father or mother wished to visit their friends, or do any shopping, they had to row in a little boat to the mainland. Grace learnt to row when she was quite a little girl. If the seas were rough and stormy it would be too dangerous to take out their rowing boat, so they had to stay at the lighthouse for weeks at a time.

Grace Hears a Strange Sound

One stormy night, Grace woke up to hear the howling of the wind and the rough waves dashing high against the lighthouse. For some time she lay still in bed, listening to the sounds of the storm. Presently she thought she heard another sound. What was it ? It was not the wind, nor the waves. She sat up in bed and listened. It sounded like a cry for help from across the water. She knew a ship must have been wrecked, and the people were drowning and crying for help. She jumped out of bed and called to her father. "Father ! Father ! Wake up ! A ship in distress. We must go and save the drowning people."

The lighthouse keeper got up, and looked out

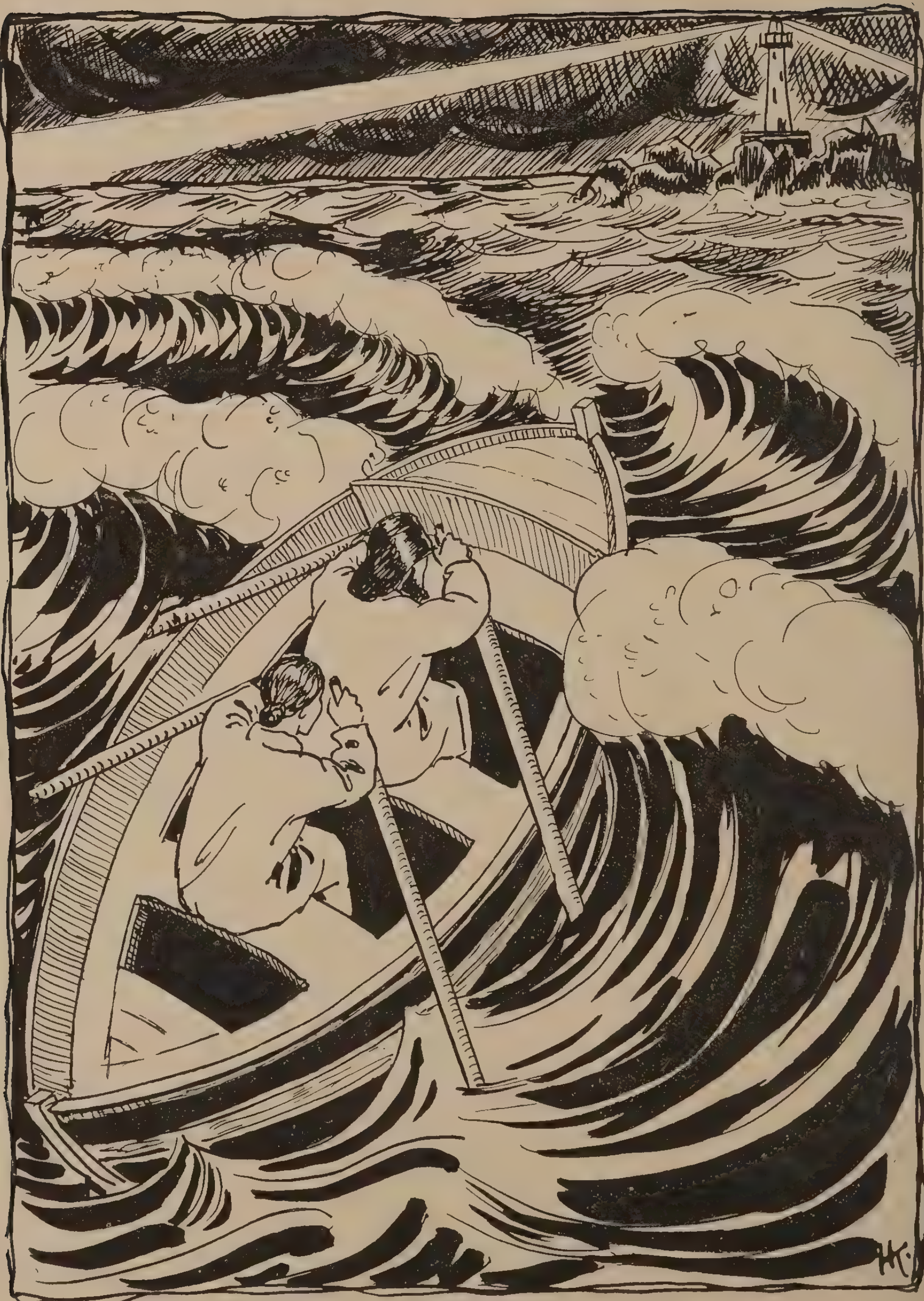


FIG. 40

Grace Darling Sets Out in the Storm with her Father of the window. The night was dark, and black storm clouds covered the sky. Nothing could be seen but the bright beams of the lamp, just around the lighthouse.

"I cannot go," the father said, "my boat would be dashed to pieces in this storm, and I cannot see the ship." So Grace and her father stood together looking out into the darkness, waiting for the morning light. The fierce storm raged around, and sometimes above the roar of the sea could be heard the sad cries of the shipwrecked people.

Grace Sees the Wreck

At last dawn came, and away in the distance Grace could dimly see the ship that had struck against the rocks and some people clinging desperately to its sides.

Grace turned to her father and said, "We must take out the boat and go to the rescue." But her father shook his head. "No! no!" he said, "I cannot go. It is no use my trying. My boat cannot stand against this storm."

Grace stood and watched the poor drowning people. "Father, we must go," she persisted, "we cannot let these people drown, without even trying to save them." But her father said again, "No! no! It is impossible for me to put out alone in such a sea. I cannot row the boat alone, and there is no strong man here to help." Then Grace pleaded, "Let me go, too. I am strong and I can row."

When her mother heard this, she tried to stop her. "It is madness. A young girl like you is not strong enough. You cannot row in such a tempest. You will both be drowned."

Grace Helps to Rescue the People

But Grace wanted so badly to try to go to rescue the people, that at length her father got out the boat, and they pushed out to sea, Grace helping her father to row. It was hard and tiring work to row in such a sea. Waves splashed over the boat, and Grace was soon wet through. The boat tossed up and down, and many a time it seemed as if it would be overturned. But Grace did not give in; bravely she rowed on, struggling against the waves, and at last they reached the wrecked ship. There they found eight men and one woman crouching against a rock. They helped them into the boat, and with great difficulty they managed to row them safely back to the lighthouse.

There Grace and her mother gave them warm dry clothes and food, and when they had rested they were feeling better again.

They were very grateful to Grace Darling, and were full of praises for the brave girl who had ventured out in such a fierce storm to rescue them, and had, by so doing, saved their lives.

Handwork. Draw and colour pictures of a boat on a rough sea. Cut a lighthouse out of paper with its yellow beams (*see November inset*). The lighthouse and boats can be made from plasticine. Draw pictures, or tell, of any lifeboats seen launched when away on holidays. Place a form in the middle of the room, and let the children pretend to be rowing.

The TEACHING of GEOGRAPHY

CHILDREN OF OTHER LANDS

LITTLE TOO-KEE, THE ESKIMO

LITTLE Too-kee lives far, far away in the North where it is very cold.

If we went to visit her, it would seem a strange land to us, for everywhere we turn we should see snow and ice. The mountains are white, the land everywhere is white, the rivers are frozen, and ice covers the sea far out from the land, except in summer, when the sea is open and beautiful icebergs float upon it.

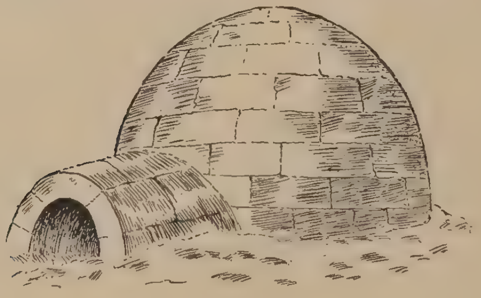


FIG. 1, A

Little Too-kee's Winter House

It is so cold in Too-kee's land that trees and grass cannot grow there. Only a kind of moss grows under the snow. It is grey and hard.

Little Too-kee's House

Little Too-kee has a winter house and a summer house. Her winter house looks like a white mound, or like a sugar bowl turned upside down (Fig. 1, A). This is how her father built the winter house. First he made a ring in the snow. This ring was as large as he wanted his house to be. Then he cut some blocks of snow and arranged them on this ring. Then he laid more blocks on top of these, and then more blocks.

Each row of snow blocks leaned a little more to the centre, and was smaller, until at last one round block of snow formed the top. Then he filled all the cracks with loose snow and his house was soon frozen hard. As he built, he left a hole at one side for a doorway, and built a snow tunnel leading up to it to keep out the cold wind.

Too-kee's winter house is called an igloo. If we go inside with her we shall have to crawl on our hands and knees, because the tunnel and the door are so low.

Inside there is a large bench by the wall made of snow and covered with furs. This serves as a bed at night.

Her Summer House

In summer, when some of the ice melts along the coast, and the grey moss and rocks show here and there, Too-kee lives in her summer house. This is a tent made of seal skins sewn together. Sometimes, if wood is drifted to the shore from warmer lands far away, they make a pole from this to support their tent. But if they cannot get wood, they use the bones of large animals for tent poles. (Fig. I, B.)

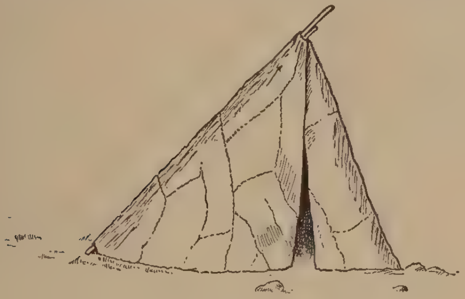


FIG. I, B

Little Too-kee's Summer House

Too-kee has no fire-place or stove in her home, but her winter house is warmed and lighted by a lamp. This lamp is simply a hollowed-out piece of soft rock or stone. In shape it looks something like a very large shell. (*See* Fig. 6, page 632.)

Too-kee's Food

As no trees or plants or grass grow in the cold land of the Eskimo, they have to get their clothing, their oil, and their food from the animals that live in the sea. In the sea, Too-kee's father catches the seal, the walrus, and the whale; and from these he gets his dinner, his clothes, his boots, his summer house or tent, needles and thread for his wife, spears and harpoons for himself, and many other things he needs for his daily life, as you will see.

Besides the animals that live nearly always in the sea, there is the polar bear that lives on the shore, but loves to swim in the water—for, like the Eskimo, he finds fish or young seals or whatever he can catch in the sea for food.

Too-kee's father is a clever hunter, and Too-kee often wishes that she were a boy, so that she could help him.

He uses spears and harpoons. These are long pieces of driftwood with a sharp head at one end made of bone. He also uses the bow and arrow when he wants to shoot birds in the summer. He catches fish with fish-hooks made of bone. (*See* Fig. 2.)

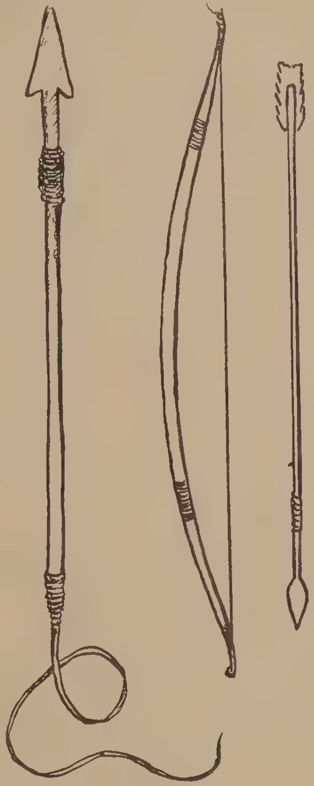


FIG. 2

Her Father's Harpoon, and Bow and Arrow

Hunting in Winter and Summer

In the winter, when the sea is all frozen over, the seals are hidden under the ice. But the seal must get some fresh air or else he cannot live. Now here and there are holes in the ice, where the seals come to breathe in winter. When

Too-kee's father finds a hole, he lies quietly down beside it for hours. As soon as a seal pops up his head, Too-kee's father stabs it with his harpoon and pulls it on to land.

In the summer, he goes out in his little boat called a kayak, made of whalebone and covered with skin. He takes his spear and harpoon, and hunts the walrus and the seal on the sea.

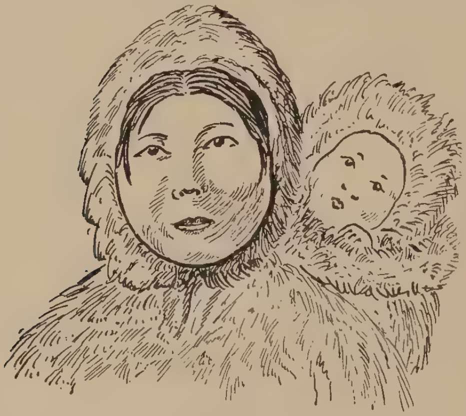


FIG. 3

Too-kee Rides in her Mother's Hood, when a Baby

Too-kee Helps to Sew

While her father is out hunting, Too-kee stays at home and helps her mother. In this cold land warm clothing is needed, so the little girl helps her mother to make clothes for the family from the skins of the animals. Their needles are made of pointed pieces of bone, their thread is narrow strips of skin. Every one has two suits of clothes that they wear at the same time—two pairs of trousers, and two coats. The inner suit has the fur next the body, but the outer suit has the hair outside.

Each outer coat or jacket has a hood at the back which can be pulled up when it is very cold.

The women have very big hoods, for these hoods are used to carry the babies in ; and nice warm cradles they do make ! When Too-kee was a baby, she often slept in her mother's hood. You can see her in the hood in the picture, Fig. 3.

Besides making all these suits of clothes, Too-kee helps to make high boots of seal-skin, and fur gloves.

How the Eskimos Travel

When they travel, they ride on a sledge made of driftwood and bone. The sledges are drawn by dogs.

The Eskimo cannot keep horses, for he has no grass on which to feed them, but a dog will eat meat like a man, and so can be fed with the flesh of the seal just like his master.

Too-kee loved playing with her dogs when they were puppies, but now they are grown up they are rather fierce. We should think them like grey wolves.

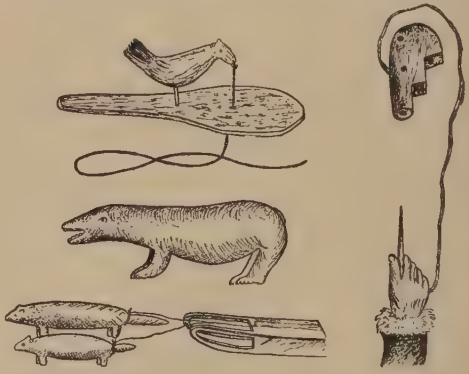


FIG. 4

Some of Too-kee's Toys

Too-kee looks a merry little girl in her warm furs. She has a yellow face with rosy cheeks, black eyes twinkling with fun, very white teeth, and long black hair. Even in her land of snow and ice she is not without toys. Her father carves her little birds, and dolls and dogs out of bone or ivory (the tusks of the walrus). You can see her toys in the picture, Fig. 4.

You can play at being Eskimos in your garden or the form room. How will you make harpoons? How will you make a sledge?

Directions for making sledges, etc., and modelling the land of the Eskimos, will be found in the *Section on Construction of Various Types of Country*, page 726. Here, too, will be found simple outlines of all the animals mentioned, for little ones to draw or model.

LITTLE HASSAN, THE BOY OF THE HOT, DRY DESERT

FAR, far away in the south, is a hot, dry land called a desert. If we made a journey to this land, we should see nothing around us but sand and rocks, on which the hot sun is always shining.

The sand is heaped up in low hills like those you model on the sand table. In some parts of the desert the sand is a beautiful golden colour; in some parts it is grey, or whitish brown. Here and there in the desert are great rocks of many different colours. Sometimes the sand is flat and covered with small stones. Can you make your sand table look like a desert?

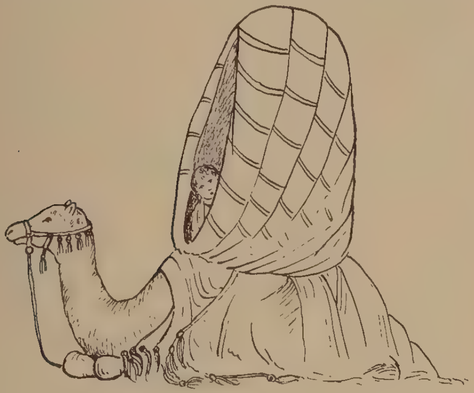


FIG. 5

The Tent on the Camel's Back, which Shelters Hassan's Mother

Little Hassan and his father and mother and brothers and sisters are Arabs who live in this dry, sunny land. With their camels, horses, sheep and goats, they wander about the desert looking for grass for their animals.

Because it hardly ever rains in the desert, grass is hard to find. But here and there, a well springs up from far below the ground, and forms a pool or beautiful pond. Around these ponds grass grows, and tall palm trees bearing dates. These pretty places are called oases. Hassan and his people could not live in the desert if there were no green spots, or oases.

Travelling in the Desert

Besides the grass and trees that grow by the wells, there are queer prickly bushes and grey shrubs that grow here and there in the desert. The camels can feed on these, for their mouths do not mind prickles.

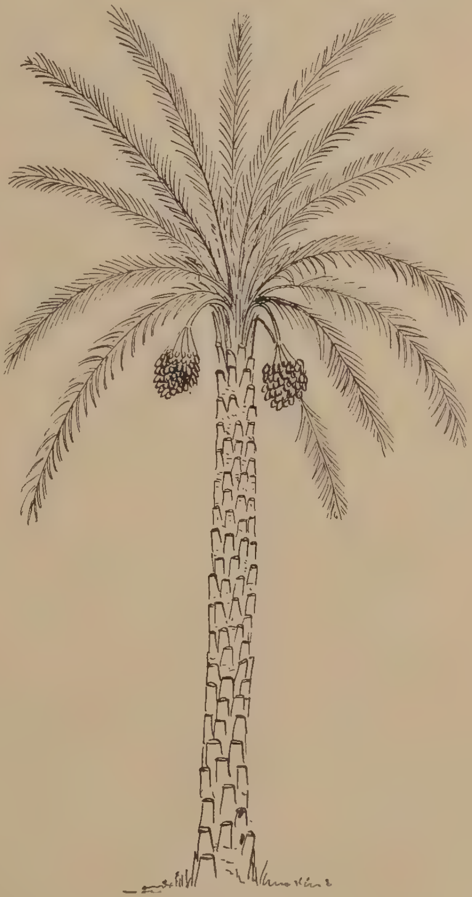


FIG. 6

A Date Palm

Hassan is never afraid among the lonely sandhills or rocks, for he knows his father will never lose his way, but lead him safely from one green spot to another. Sometimes they go to an oasis because they hear the grass is good there, sometimes they go to one because there is plenty of water, and they want to fill their water skins or leather bottles.

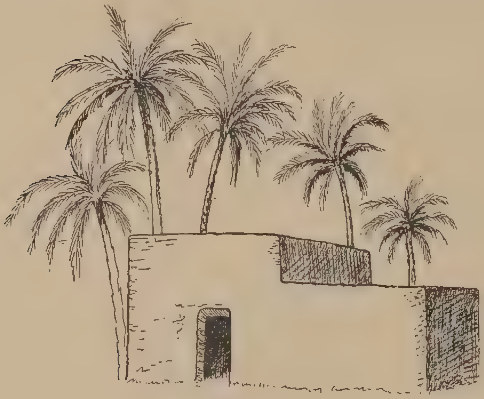


FIG. 7

An Arab House in an Oasis

They travel in the early morning and the evening, for they do not like the great heat of the sun in the middle of the day. When the sun is too hot they rest in their tents, or in the welcome shelter of the rocks.

It is not much trouble for them to move from place to place, for Hassan's home is a tent that can be easily put up or taken down. It is a black tent made of goats' hair woven by the women. All Hassan's goats are black. When it is put up, it is stretched over nine short poles. It is quite a low tent, but it keeps off the sun and the cold air at night. Inside the tent are cushions and mats for sitting and sleeping on, jars and bowls for holding water and cooking. The camels carry all their belongings when they travel. (Fig. 5.)

What Arabs Eat

Hassan and his family live on dates, which they find at every oasis; they drink goats' milk and camels' milk, and eat cheese made from this milk.

Sometimes they come to an oasis, which is so large, and has such a plentiful supply of water, that many people can live there, and houses and shops are built and lovely fruit gardens made. (Fig. 7.)

When Hassan comes to an oasis like this, he wanders about among the flat-roofed houses and shops, talks to the people, and enjoys all sorts of good things to eat—oranges and figs, cakes and sweets. His father sometimes sells his sheep or camels, and buys corn, so that they can carry some with them on their wanderings, and have bread to eat with their milk.

Hassan's Camel

Hassan loves his camels, especially the baby camels. His father gave him one for his own. It seems a strange animal to us. It has a hump on its back. Its neck and legs are very long. It has brown eyes. Hassan thinks his camel has very pretty brown eyes, but now it has grown

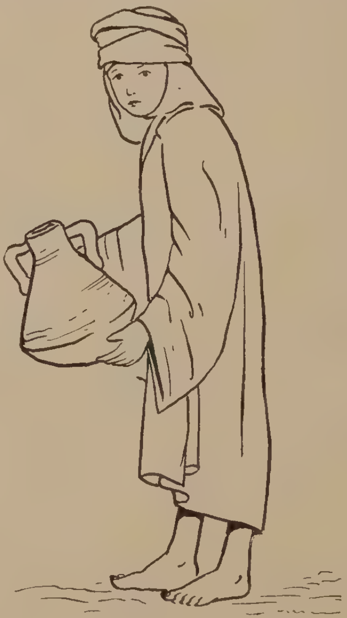


FIG. 8

Little Hassan

up, it is sometimes very cross and growls when a heavy load is put on its back.

The camel is very useful to Hassan's people. They drink its milk. The women weave the hair into cloth for tents and clothes. Bags are made from its skin. The camel, too, can travel three or four days without drinking, and has wide feet that keep it from sinking in the sand, so that it is just the right kind of animal to live in the desert.

What Little Hassan Looks Like

Hassan has a thoughtful face with black eyes and hair. The sun has made his skin dark. He wears a loose blue gown and a long white cloth is wrapped around his head. (Fig. 8.) His sister, too, wears a blue cotton dress, loose and long. Her father bought it at a town in an oasis. She wears gilded bracelets and anklets, and has a pretty veil over her head.

While Hassan helps his father to look after the goats and camels, his sister helps her mother to take care of the tent. She helps to grind the corn that her father buys into flour. She grinds it between two big stones. This flour is made into thin cakes. Then she learns to weave cloth from goats' hair and camels' hair. So she is a very busy little girl.

You can play at being Arabs in your form room or in the garden. How will you make your tent? Perhaps you can arrange a dark rug over some chairs. You will enjoy travelling from one oasis to another. Perhaps you will really find dates and water at one!

Directions for making an oasis, simple shapes of camels for children to cut out, etc., will be found in the *Section on Construction of Various Types of Country*, page 734.

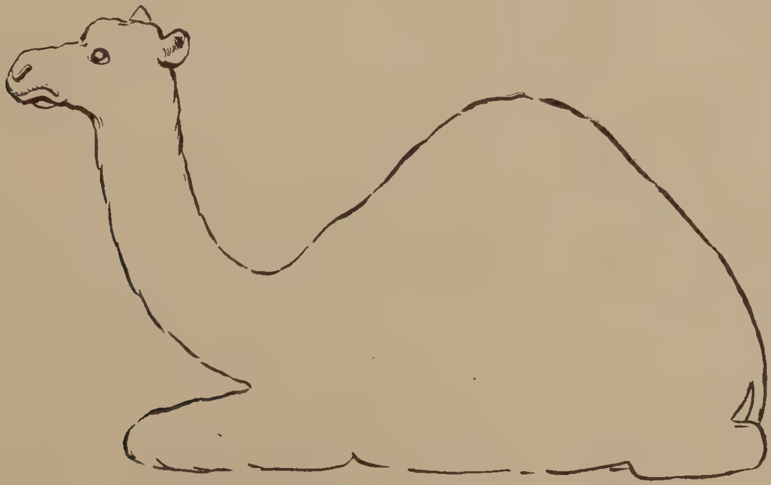


FIG. 9

Camel to be Traced and Hectographed for the Children to cut out and colour

(*See also page* 735)

LITTLE BLASIYO, A CHILD OF THE HOT FORESTS

FAR, far away in the south, are beautiful green lands where the sun shines warmly and brightly all the year round and there is no cold winter. But rain often falls, and the heat and the rain make the trees and the plants grow so quickly, that in some places the forests are so thick that they shut out all the sunlight.

As there is no winter to stop the plants from growing, there are always beautiful green leaves, lovely flowers, and fruits on the tall trees.

In one of these great forests lives Blasiyo, a tiny little boy. He belongs to the pygmies, the little people of the forest. He has skin of the colour of copper, woolly hair, a big mouth, and a little nose. It is so hot in the forest, that he wears no clothing.

Blasiyo's father is only a little fellow. He is about as big as a child of eleven or twelve. But he is a clever hunter and knows well how to use his bow and arrow and his spear. He can catch fish, too, without a hook ; he uses meat and a long piece of a creeper for a string.

In the Dark Forest

All pygmies need to be clever hunters, for they keep no animals, and grow no food. They travel about in search of it, like the Eskimos It is difficult hunting in the forest, because it is so thick that animals are hard to find. There are only pathways made here and there by big animals like the elephants. Along these pathways smaller animals find their way.

Then the trees are so tall, that the birds and animals, like the monkeys, are often out of reach.

Blasiyo is not old enough yet to go hunting elephants, but he tries to climb the trees until he is high enough to pick the fruits that grow on them. Most of the flowers and fruits are away up high in the tree tops, where they can catch the sunshine. In the forest itself it is very dark.

Sometimes, far up in a tree-hole he finds the nest of the wild bees. Then he takes their honey and is very happy, for all pygmies love honey.

He knows, too, where to look for roots that are good to eat, and mushrooms ; these he brings home to his mother to cook or eat raw. He loves bananas and often wanders to the open sunny land outside the forest to look for the banana tree.

The pygmies are shy little people, and do not like to leave the shelter of their forest, nor do they like strangers to come into their forest.

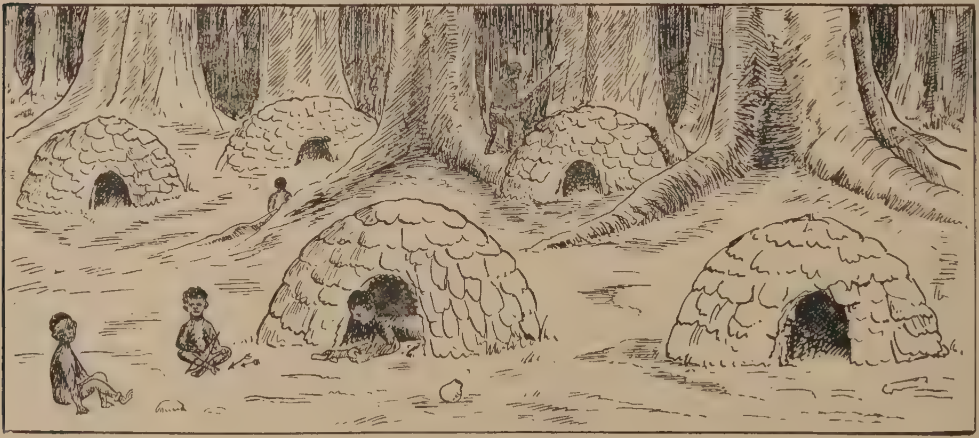


FIG. 10

Little Blasiyo's Home in the Dark Forest

A Pygmy House

Blasiyo often helps his father and mother to make a little house. The little people make their houses, not for warmth, but to have a dry place to sleep in when the heavy rains fall. They choose an open part of the forest for their houses. When they are built, they are something like large beehives.

Thin branches are first stuck in the ground in a circle, then they are bent over the top and tied together. Large leaves and pieces of creeping plants are twined in and out. Many leaves are fastened on the framework, and these are plastered with mud. There is plenty of both leaves and mud in the great damp forest. Fig. 10 shows Blasiyo's home in the forest.

Blasiyo's father can build a beehive house so snug and cosy, that even the heaviest rains that come so often in the forests of the hot lands cannot beat their way in.

A little hole near the ground is the door, and Blasiyo and his people enter by creeping on all fours. His mother gets red earth from an anthill to make the floor of the hut, and beats it down until it is firm, hard, and shining.

Inside the Hut

There is no furniture in the hut, for men who move about often do not want to carry many things. At one side of the hut will stand the men's bows and arrows, at another side the women's cooking pots. Perhaps some of the women have a bag or basket.

The forest gives them different kinds of natural pots, the shell of a big nut, a hollow piece of wood, or the dried skin of a fruit like the pumpkin. Some of the little people are clever enough to make pots of clay and bake them. (Fig. 11.)

The men's arrows are so small that they do not make a deep wound, so they dip each dart and arrow into poisonous juice taken from some plant. In this way they can kill their enemies with a tiny wound.

We should be afraid to live in the dark forest where strange animals roam about. Little Blasiyo has no fear. He looks forward one day to hunting the elephant with his tiny bow and arrow. He is not afraid of the big monkeys or the snakes. He has keen eyes, and knows by looking at the ground what animal has passed along it ; he has quick ears and knows the meaning of every rustle in the forest, so that he can quickly get out of the way of danger.

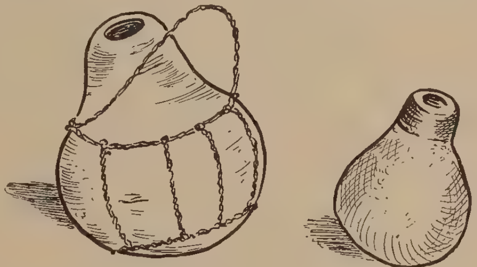


FIG. 11

Pots of the Little People, made of the Dried Skins of some Fruits and Clay

Do you think you can make Blasiyo's little hut ? Perhaps you can model some of the little people in clay or plasticine. Make some pots for them.

Suggestions for making a forest and pictures of some of the animals found in the forest will be found in the *Section on Construction of Various Types of Country*, page 736.

LITTLE OSOM, A NEGRO OF THE HOT COUNTRY

OSOM is a little black boy. He lives in a hot country where it often rains. His home is near the big forest, where Blasiyo and the little people live.

Osom looks a very jolly little fellow. He has bright black eyes, his skin is black, his teeth are very white, and his hair is woolly. He wears a strip of cloth about his waist. He likes bright beads and rings. (Fig. 12.)

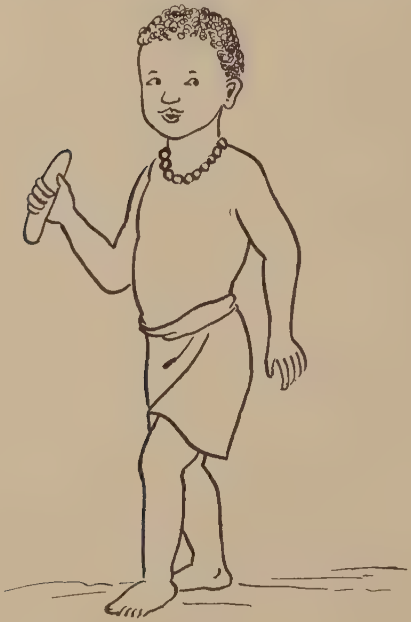


FIG. 12

Osom, a little Black Boy

Osom does not live a wandering life, for his father is a farmer. He lives in a village with many other farmers. All around the village lie pleasant grass lands with trees here and there. The farmers have plenty of room to grow things, and plenty of grass for their animals; far, far away they can see the edge of the forest where the land is full of trees and where the pygmies live.

You will like to know what the negro farmers grow. They grow rice, maize, wheat, vegetables, bananas, tobacco, and cotton.

Osom's House

Osom's house is round. It is built of poles and grass, and the bark of trees, and mud. The roof is made of grass and leaves. It is so thick, it keeps out the rain. There are ten or eleven huts near Osom's hut. They are set in a circle, and around them all is a high fence to keep out the wild animals.

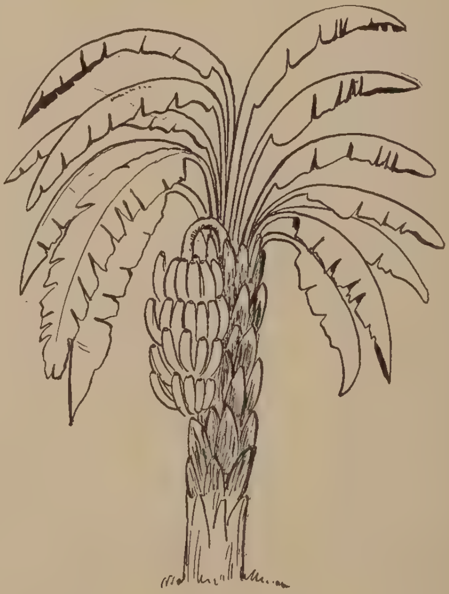


FIG. 13

Bananas Growing on the Tree

Osom is a happy little boy. He plays all day around the huts in the shade of the banana trees (Fig. 13), or chases the butterflies.

He makes clay animals and bakes them in the sun. He and the other children are very clever at making little huts of grass and mud, just like their own big ones. When Osom is old enough, he will go out with the big boys and help to mind the cattle.

Osom and His Little Sister Help Mother

The little fields around the village are looked after by the women and girls. Osom often goes to the fields to help his mother to weed, or runs by her side when she fetches water from the stream. Osom's sister often fetches the water. She pounds the corn with a heavy hammer to make meal for porridge or bread (Fig. 14). She sweeps the house and keeps it tidy.

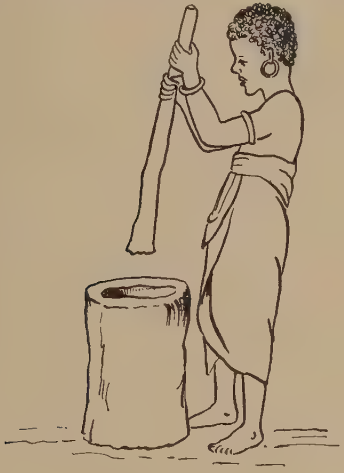


FIG. 14

Osom's Sister Pounding Corn

You would like to see Osom and his family at dinner.

Every one sits on the floor, with the porridge put in the middle. The first person helps himself with a spoon, then passes the spoon to the next one, and so on until the pot is empty. The meal ends with a good drink of fresh milk.

Besides porridge, they have fruit to eat and good things from the garden.

Sometimes Osom's father and the big boys go far away into the forest of the pygmies to hunt. Elephants are hunted for their tusks of ivory. Osom means to go hunting one day.

Osom's Bedtime

Osom thinks the happiest time of the day is when the big boys drive the cattle in at night, and come and sit around the evening fire for supper. They tell stories of all kinds, stories of hunting, and of fighting, and fairy tales about animals. Osom enjoys them all, until he gets so sleepy that he has to crawl into his hut and go to sleep on his little grass mat.

Osom also enjoys the music of his people. They have drums, whistles, and rattles. (Fig. 15.) One day Osom will be able to beat a drum, and perhaps tell stories himself around the fire.

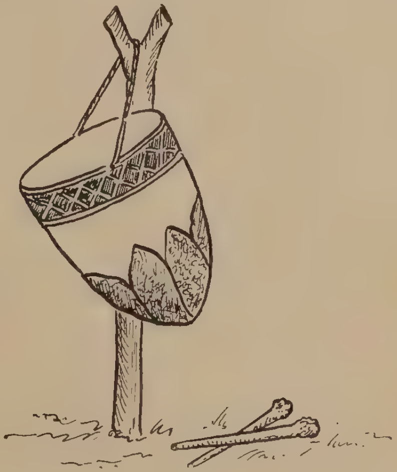


FIG. 15

Osom's Drum

Directions for making Osom's house, etc., will be found in the *Section on Construction of Various Types of Country*, page 740.

LITTLE MINA OF HOLLAND

LITTLE MINA lives in Holland, a land across the sea not far from England. Holland is a land of green fields with rivers, or canals, running through them, this way and that. In the fields are black and white cows.

Little Mina lives in a pretty farmhouse (Fig. 16). It has a steep roof of red tiles, the walls are painted pale yellow, and the windows and the doors are painted green. It looks very gay.

Mina, too, is a gay little girl. She has blue eyes and rosy cheeks. Her hair is golden.

Mina looks like a little woman, for her dress is like her mother's. She has a long skirt and an apron. She wears a white cap every day (Fig. 18). Mina's shoes are made of wood. When she walks they go "click-clack, click-clack." She washes her shoes with soap and water. This makes them white and clean. Her hard shoes do not hurt her feet, because she wears thick stockings. These she knits herself. When she goes indoors, she leaves her shoes outside.

Her Father's Farm

Her father has many cows. Inside Mina's dairy are many big round yellow balls. Each ball is a cheese. There are tubs of butter, too.

Mina's father has two dogs and a pretty little green milk cart, with bright yellow cans. The dogs draw this cart to market to sell the milk (Fig. 17). When Mina is old enough, she is going with her dogs to market. She is very fond of them.

Besides the pretty dairy and sheds for the cows, Mina's father has a windmill. Windmills in Holland do all sorts of work. Some pump water, some grind wheat or do other kinds of work. (*See* Fig. 2, page 135.)

Holland is such a low, flat land, that great walls have to be built to keep the sea out. Mina loves to walk on these broad walls and watch the sea. How the wind blows! It is almost always breezy in Holland, because the land is so near the sea, that the wind from the ocean floats over it. This wind moves the boats with their red sails along the canals and rivers, and keeps the great arms of the windmills moving.

Holland's Fields of Flowers

In some of the fields of Holland there are no cows, but beautiful flowers grow. There are fields of red, pink, yellow, and white roses,

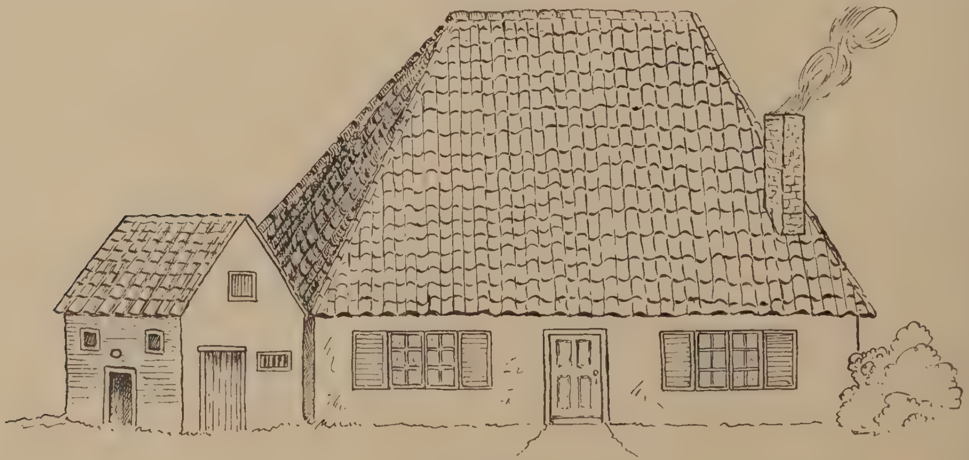


FIG. 16

Little Mina's Farmhouse

fields of tulips of all colours, and fields of hyacinths.

The Dutch love flowers. Little Mina often wishes her father had fields of flowers instead of cows. But she is really a very lucky little girl. She has plenty of good food—good butter and cheese, good beef and mutton, fruit and vegetables of all kinds, and dainty cakes, which her mother makes.

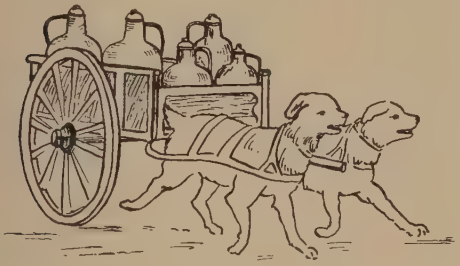


FIG. 17
Little Mina's Milk Cart and Dogs

She goes to a school very much like your school, but the language is different and the books would seem strange to you.

Mina loves the winter. Then the canals and rivers are frozen over, and she skates wherever she wants to go, or rides in a sledge.

Many winter games are played on skates. Tents are put up on the ice, and here hot milk can be bought, and sweets and cakes.

In Winter Time

Winter, too, brings Christmas, and then St. Nicholas comes. St. Nicholas does for the Dutch children what Santa Claus does for us. He rides on a white horse over the roof of every Dutch house. He has a long beard like Santa Claus, and is dressed in a red gown trimmed with fur.

Mina and the Dutch children put straw in their little wooden shoes for his horse, and they put their shoes near the chimney. They hope St. Nicholas, when he comes, will put something nice in them.

Can you make the green fields of Holland on your sand-table ? Use one half of your sand-table for the sea, and one for the land. Build a strong clay wall to keep out the sea. Separate the fields by canals or rivers, make bridges for people to get from one field to another. Perhaps you can make a windmill to pump water from the fields into the canals. If you have any toy black and white cows, put them in the fields. Can you make a field of tulips ?

Try to model from clay or paper Mina's farmhouse. Make her milk cart from a match box. What will you do for wheels ? Make the yellow cans from yellow plasticine. Perhaps you can make two little clay dogs to draw the cart.

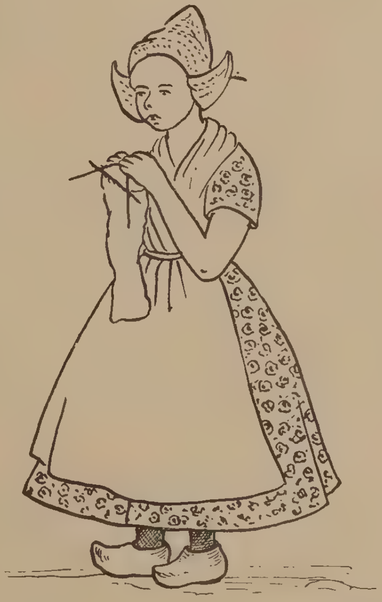


FIG. 18
Little Mina of Holland

Make some round Dutch cheeses. Some are yellow and some are painted red. Have you seen them in shops ? And who would like to make a Dutch cap from this piece of white paper ?

MARIE, A LITTLE MOUNTAIN MAIDEN

LITTLE MARIE lives in Switzerland, up among the high mountains.

She loves to lie on the short grass in front of her little wooden house, and watch her goats and cows feeding. She loves to watch the sun in the evening, making the snow on the high mountain-tops, far above, look rosy red. Little Marie lives upon the mountain side with her father, mother, and brother. There are no other houses very near them.

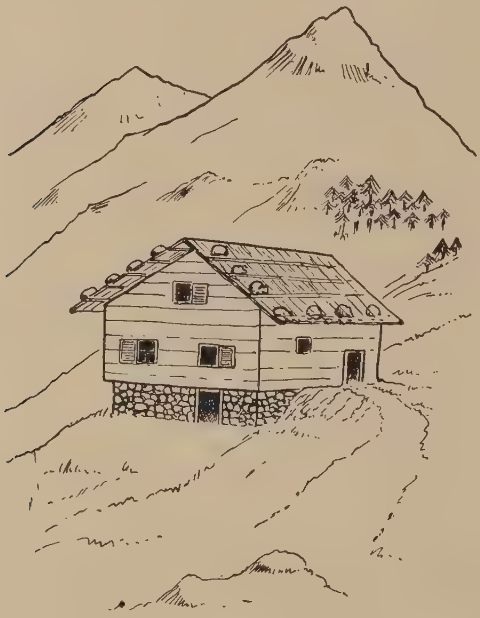


FIG. 19

Marie's House Amongst the Mountains

Marie's House

Her house is built of logs of wood (Fig. 19). It has a long sloping roof, so that the snow can slide off in winter. On this roof heavy stones are laid, for the wind is strong in the mountains and it sometimes blows the roofs off. Under the same roof are the barns for the cows and goats, for they must have a warm house in the winter.

Far away down in the valley Marie knows there is a town where her mother lived when she was young. She can see the roofs of the houses.

Her father has promised to take her down to the town when she is a big girl. He often goes down to the market there, to sell the cheeses and the sweet butter that her mother makes.

Marie's father has cows and goats to look after. When the cows and goats have eaten all the grass near their house, her father drives them up farther among the mountains where more grass is growing.

Up in the Mountains

There he stays with them for many weeks. He does not even come home at night, but sleeps in a small wooden house he has built among the rocks. Here he keeps large clean milking pails, and the little one-legged stool upon which he sits at morning and night to milk the cows and goats.

When his pails are full, he has to make the butter and the cheese. He works while the animals feed. The cows have little bells tied to their necks, so that he may hear them and find them if they stray too far.

Many times when her father is away, Marie sits at home, at the door, and listens to try to hear the distant tinkling of the cow-bells. She listens, too, when she gathers the pretty flowers that grow near her cottage, or the wild strawberries and raspberries for supper. She wishes her father were at home to eat the fruit with her.

Marie is a pretty little girl. She has blue eyes and light hair, and a skin as white as a little English girl's. She wears a white blouse and a black velvet bodice, which fits closely. She has a bright coloured skirt. Her shoes are rough, and she has thick blue woollen stockings which her grandmother knits for her.

Marie's Brother

Her brother dresses like most boys do, except that he has on a short woollen jacket and heavy shoes with great nails in the soles. Thin shoes would soon wear out on the mountains. He wears a long feather in his cap. (Fig. 20.)

When he is not helping his father, he earns some money by guiding travellers over the mountains. Then he carries a pole with an iron point at the end to help him to climb up high, where the snow and ice are.

When the autumn comes, Marie's father brings the cattle home to their cosy barns, where food has been stored for them for the winter.

Marie loves the autumn, for then her father takes her a little way down the mountain-side, where there is a wood of chestnut trees. There she helps him to gather chestnuts and store them away—some are for themselves to eat, boiled, or roasted by the bright fire, in the cold winter days that are coming. Some chestnuts are carefully packed in bags, and carried by their donkey down to the town to be sold.

In Winter

In the winter it is lonely in the little house in the mountains. Snow lies all around. Sometimes the snow comes tumbling down from the mountain tops above them and nearly buries the cottage.

But inside all is snug and bright. Marie helps her mother, and learns how to knit. Her brother carves all sorts of pretty toys, and useful things like spoons out of wood. These he hopes to sell in the summer. Her father looks after the cows and goats, which are now shut up in the stables and must be fed every day. They cannot find their own food.

But all are happy, for they know that spring is coming; and once again they will be able to wander over the beautiful mountain-sides.

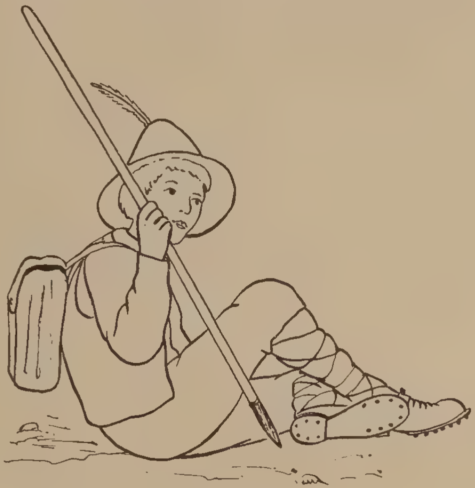


FIG. 20

Marie's Brother

Can you model some tall mountains on the sand-table or in the garden? Can you make little Marie's house? And don't forget to stack plenty of wood all round it for the winter days.

LITTLE HANA OF JAPAN

FAR away in the East are some pretty islands called Japan. Here little Hana lives. Her name means "blossom." Her father is a farmer, and she lives in a wooden house in a valley. It would seem a very queer house to us, because the walls are made of paper and bamboo, and slide in and out. No door is needed, because the walls can be taken away. The roof is made of black and white tiles, and supported on strong poles. At night, wooden shutters are put all round the house to make it safe. (Fig. 21.)

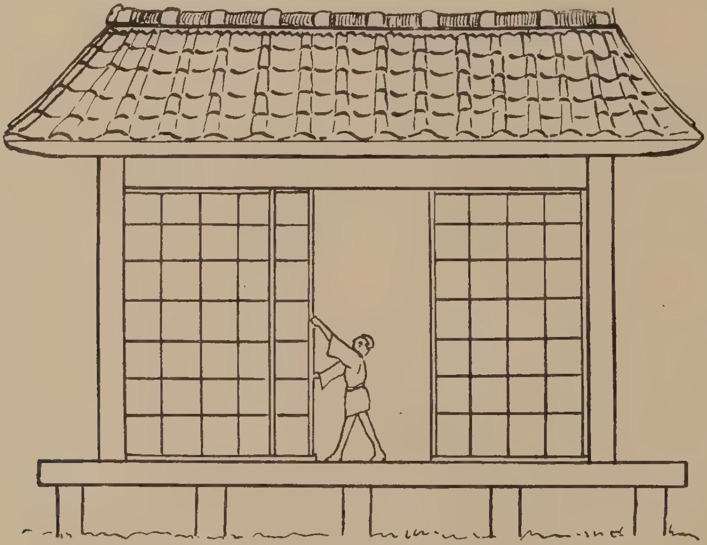


FIG. 21

A House in Japan

The walls of the rooms inside are also made of bamboo and paper. They slide to and fro, so two rooms can be made into one, and one into two.

There is very little furniture inside. No chairs, no tables, no big sofas, no carpets. Instead, the floors are covered with pale yellow mats on which Hana and her people sit. There is one vase of flowers, and one long picture on the wall, that can be rolled up like a map. (Fig. 22.)

Meal Times in Japan

At meal times, little low stools are brought in to serve as tables. Hana has her own little stool-table, and eats from little bowls with two little sticks called chop-sticks. Hana can hold her two chop-sticks in one hand and pick up food with them. Her food is mostly soup and rice, and sometimes fish. She and her brother and parents drink a great deal of tea from little cups without any handles.

It would be interesting to peep into Hana's house early in the morning and see her as she lies in bed. Her bed is made by spreading a soft thick quilt on the floor. With another quilt over her, and a wooden block with a paper pad for a pillow, little Hana sleeps comfortably.

She is awakened in the morning by her mother sliding back all the wooden shutters, so that the daylight shines in through the thin paper walls. Then Hana jumps up to dress, and rolls up her bed and puts it away. She dresses in a long loose coat called a kimono. Its wide sleeves are her pockets. She has a sash with a very big bow behind. Her brother is dressed in the same kind of gaily coloured kimono ; but he has no sash.

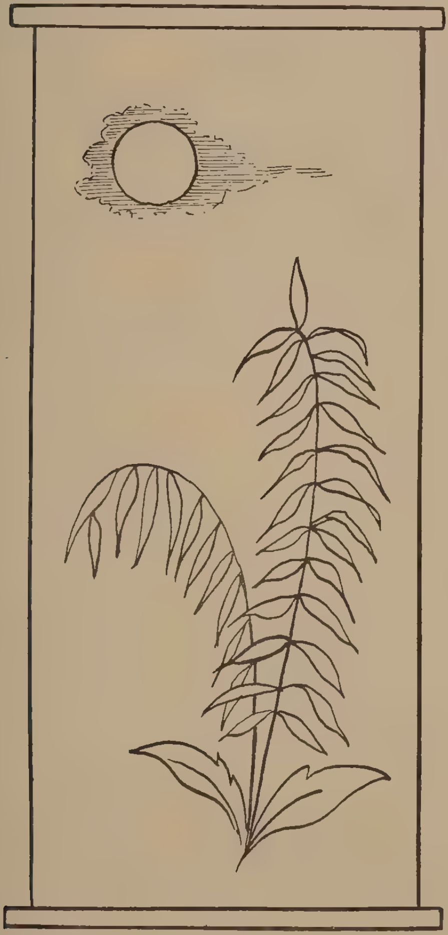


FIG. 22

Little Hana's Picture

Hana has a bright little yellow face. She has slanting black eyes, and black hair. After a breakfast of rice and tea, the children put on their sandals and hurry away to school. They wear no shoes indoors. Shoes might soil the pretty mats they sit on. They have bare feet, or stockings. The sandals are left outside. You can see Hana and her brother in the pictures. (Figs. 23 and 24.)

The Garden and Rice Fields

Around Hana's house is a pretty garden with a little pond, a little bridge, some little rocks, some tiny trees, and beautiful chrysanthemums.

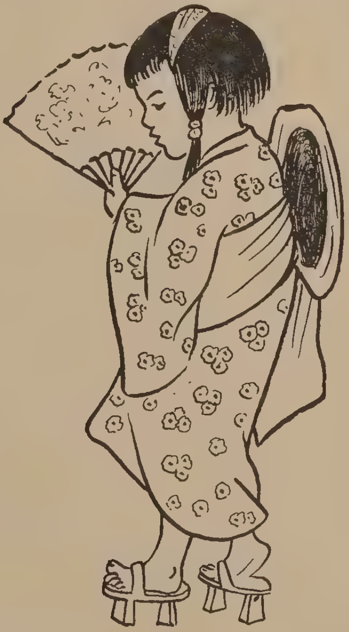


FIG. 23

Little Hana of Japan

Around the garden are her father's rice fields. These are very useful, for the rice gives the family its food, its drink (rice wine), straw mackintoshes, hats to keep off the sun, and mats for the house. As rice grows in water, the fields are not very pleasant to work in, but Hana's brother looks forward one day to helping his father in these fields.

Little Hana means one day to help her father to look after his silk-worms. They are greedy little caterpillars, and never seem to stop eating, so Hana knows she will have to work hard picking mulberry leaves for them. Then she will have to help to wind the silk off from the cocoons they make.

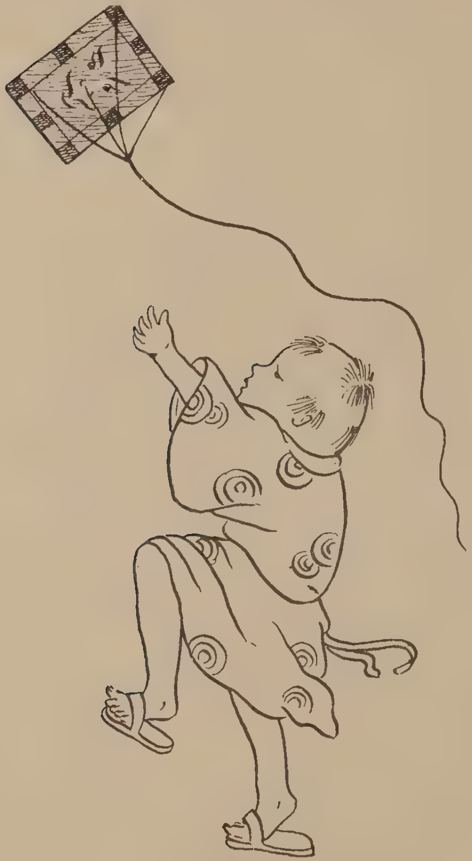


FIG. 24

Little Hana's Brother

Things Hana Loves

Little Hana loves flowers; she loves the plum blossoms and the cherry blossoms in the spring, and all the flowers of summer and autumn. But she is always sorry when winter comes, for the cold winds creep into her house of paper and wood. She has no big fires like we have to warm her. Instead of a fire-place, in the middle of the room is a fire-box, that is, a wooden box lined with metal and containing a few sticks of red hot charcoal.

But the day that little Hana loves best of all is 3rd March, the Feast of the Dolls. Then all little girls in Japan are given dolls. They bring out all their old dolls too, and give them a party.

The boys have a feast on 5th May. It is like a birthday party for every boy in Japan. They get all sorts of presents, and have fine things to eat. The boys fly their kites and play all day long. Each boy has a paper fish flying in front of his house. It is hollow, and the air makes it float and flap like a real one. You can see it in the picture (Fig. 25).

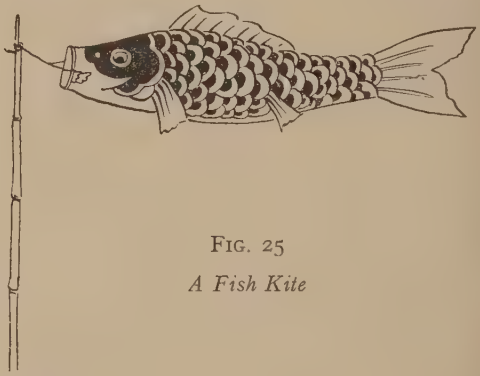


FIG. 25

A Fish Kite

A Japanese Carriage

When Hana and her mother go out riding, they get in an odd carriage. It has two long poles in front, and two large wheels, and a seat for one or two. (Fig. 26.) When they get in, a man takes up the poles. He gives the cart a tilt and away it goes. The man is strong and can run like a pony.

You can pretend you live in Japan and give a feast to your dolls. Dress them in their best clothes. You must bring as many dolls as you can.

Make a picture like the one in little Hana's house. Make it from a strip of paper, then you can roll it up to put it away. Can you make little Hana's carriage? Perhaps you can, with the help of a match box. Cut out, from tissue paper, a fish kite. Paint red or blue scales on it. Paint its eye black. If you cut two fish from tissue paper, you can paste them together around the edge. Leave the mouth open. Why do you think the mouth is left open? So that you can blow it up.

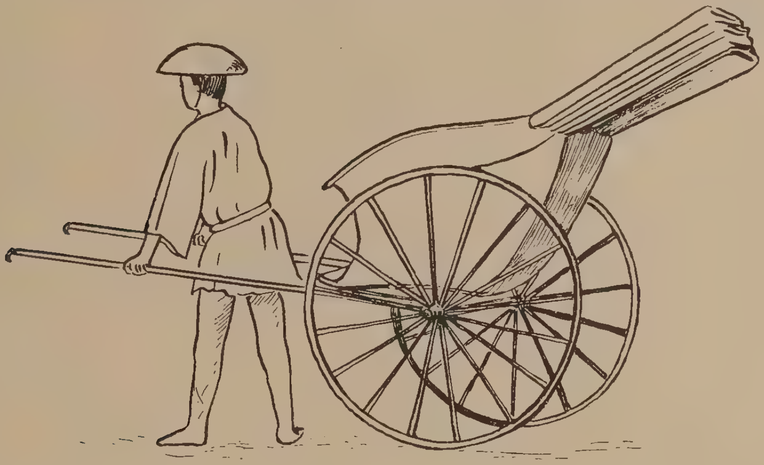


FIG. 26

Little Hana's Carriage

Can you model some islands on your sand-table for the islands of Japan? Make a valley in one, where little Hana lives.

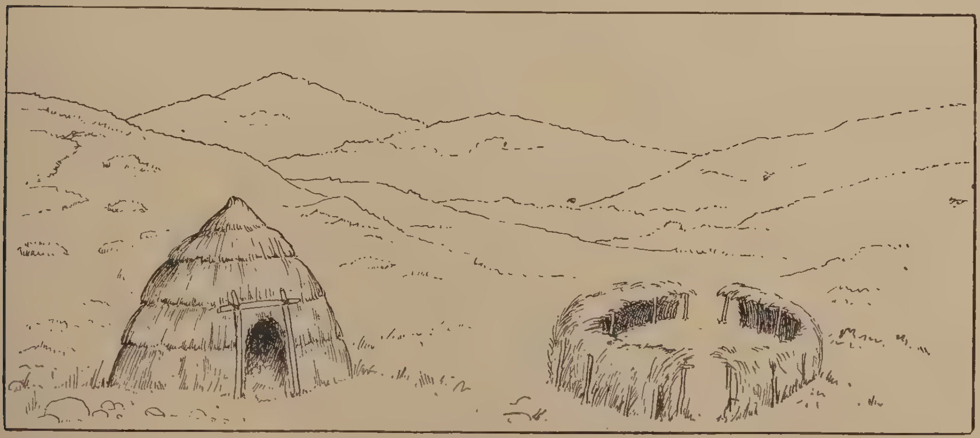


FIG. 27

Shelter for the Greek Shepherd and his Sheep in the Hills

A SHEPHERD'S LIFE IN GREECE

IT is lonely work being a shepherd in Greece. The sheep wander about day after day, looking for grass, and the shepherd must go with them to take care of them. He is far up among the bare hills with his sheep, and often does not see anybody for days and days.

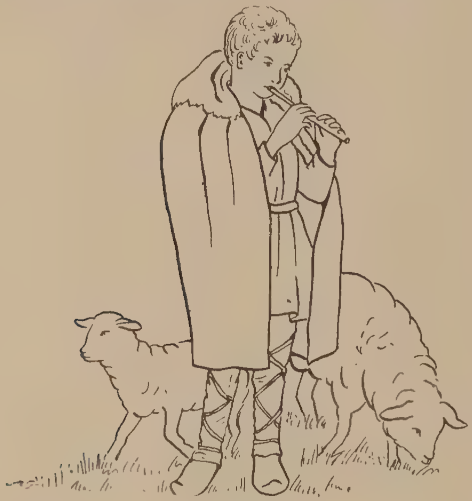


FIG. 28

A Greek Shepherd

The sheep like the short grass that grows here and there on the mountains among the rocks. That is why the shepherd takes them there.

There are many shepherds among the hills of Greece. Sometimes they hear one another's pipes far away. Then they are very glad, and drive their sheep towards the sound. When the shepherds meet, they camp together and are no longer lonely. They build shelters for themselves and their sheep. They build them of bushes or of rushes. (*See* Fig. 27.)

Where the Shepherds Shelter

The men's shelters, or huts, are like big beehives. Inside is a shelf for the men to lie on. On the ground, in the middle, a little fire burns when the nights are cold.

The shed for the sheep is a big ring with a roof around the edge (Fig. 27). In the evenings the sheep are driven into the shed, and the men sleep in their huts.

Sometimes the shepherds live together for weeks, but when the grass is all gone they move on to another place and build a new camp. The Greek shepherds love the mountains, but in winter they are very cold and covered with snow. So then the shepherds drive the sheep down into the warmer valleys, and there they wait for the spring-time.

Perhaps you can play at being Greek shepherds, and pipe to each other from the mountains. How will you make your pipes? What will you say when you meet? Can you model the hills on your sand table where the shepherds wander with their sheep? Perhaps you can make a shelter for them, and one for their sheep.

(*See suggestions in Section " A Year's Work," page* 148.)

KOONSHEE, A LITTLE YELLOW GIRL OF CHINA

IN the Far East, a long, long way from where you and I live, is a land called China. It is quite near the pretty islands of Japan.

China is a big country, much bigger than ours. The land there is flat and level. Land that is flat or nearly flat, is called a plain.

Great rivers flow through the plain of China. On these rivers are hundreds of boats. The boats are not all like ours; many of them are square-looking things, without sails, and they have houses built on them. In one of these boat-houses lives a little Chinese girl called Koonshee.

Around the sides of Koonshee's boat is a basket-work fence, and over the top is a net. For her father keeps ducks, more ducks than you can count, and the fenced-in part of the boat is their bedroom, where they sleep at night. (Fig. 29.)

Koonshee's Ducks

Early in the morning, when the ducks wake up, there is such a noise on the boat. They all waddle about as well as they can in the crowd and quack loudly. They are waking up their master, Koonshee's father, who sleeps in the little house in the middle of his boat, with his wife and children. Out he comes quickly with his little daughter. He opens a door in the basket-work fence, and all the ducks hurry out to reach the water. How they enjoy diving and washing themselves, after being shut up all night!

Then they all swim after their leader, an old drake, who takes them to the marshes by the banks of the river where they feed all day. They will come back at night when they hear their master's shrill whistle calling them home to bed.

Breakfast Time in China

When Koonshee has seen the ducks let loose, she goes in to her own breakfast. You will like to see her at breakfast. Inside the little house are benches, and a table at which the family sit. There is tea for the children as well as the father and mother. They have no milk. Then there are bowls of rice, but no spoons or forks with which to eat it. Koonshee uses two small sticks, or chop-sticks, like little Hana of Japan.

Indeed, the children look much like our little Japanese friend. They have yellow skins, and black eyes, a little slanting, and their hair is very black. But they dress differently. Both Koonshee and her brother wear trousers and

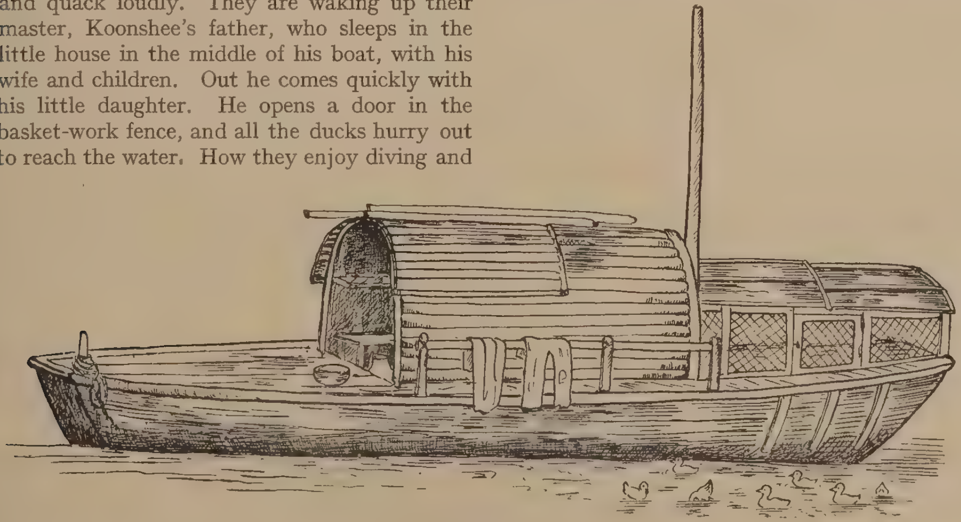


FIG. 29

Little Koonshee's House-boat

coats of blue cotton. Most of the children in China are dressed in blue cotton. Chinese people seem very fond of blue.

Their Daily Work

As soon as breakfast is over, every one goes off to work. Koonshee's father goes on shore to carry tea-boxes for a great tea merchant. Koonshee's brother, Wang, goes fishing. Koonshee and her mother take a small rowing boat, and carry fruit and vegetables to the big ships lying near the mouth of the river.

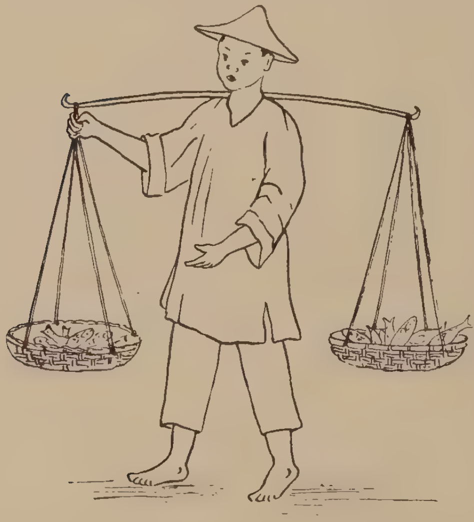


FIG. 30

Koonshee's Brother Going to Sell Fish

When dinner time comes, they all return to the boathouse. They have rice again for dinner, and perhaps a little fish. They very rarely have meat. When dinner is over, Wang sets out for the town to sell his fish. He puts a bamboo pole over his shoulders with a basket of fish hanging at each end, and trots off. (Fig. 30.)

The town is a very busy place. There are gay signposts in front of the shops. There are men in big straw hats, and cotton clothes, carrying boxes or baskets on the two ends of a pole that rests on their shoulder—just as Wang carries his fish. There are rich men in gowns of bright silk or satin, and boys dressed in the same way. There is always a great deal to see in a town, and Wang has plenty to tell when he gets home.

Koonshee's Day-dreams

Koonshee stays at home sometimes in the afternoon. It is very pleasant on the river. She can see the men working in the rice fields, and away, in the distance on some hills, the garden walls of some rich people. Sometimes Koonshee wishes she were rich and lived in a brick house with a fine courtyard with some trees and a pond. Then she would wear silks and satins, and ride in a chair carried by poles on men's shoulders.

When she was little, Koonshee lived among the hills where the tea grows. Although she was only a baby then, she remembers the tea plants with their glossy green leaves and sweet-smelling white blossoms ; she remembers watching her father pick the leaves. Here too, in her old home, grew the mulberry trees, with their purple and white fruits ; Koonshee loved the little caterpillars that ate the mulberry leaves and then spun for themselves a silken shell to go to sleep in. She used to watch her mother wind off the fine silk and make it into skeins.

They were better off in those days. But in China there are so many people, that it is hard to find houses for all. When her father lost his money, they were glad to sell their tea plants and find a home on a boat.

A Happy Little Girl

And after all, Koonshee thinks it is very pleasant on the river with the ducks and geese. And when she lies down on her hard little mat, and is rocked to sleep by the tide while the boat-lights sparkle on the river, she does not really envy little Chinese girls who live in brick houses.

Perhaps you can make a model of Koonshee's boat, with the little bamboo house in the middle. Perhaps, too, you can make the plain of China on your sand-table and show the rivers running through it to the sea. Choose one river for Koonshee's river.

A LITTLE BROWN BOY OF THE HOT LANDS

YOU have had stories of little yellow boys and girls (Hana of Japan, and Koonshee of China), stories of little black boys and girls (Osom of the hot lands), stories of white girls and boys (Little Mina of Holland), and many others. This is a story of a little brown boy. He has a yellowish brown skin, dark eyes, and straight black hair. He has lovely white teeth.

He lives in the hot land of Malay. He is a happy little boy. He wears a kind of skirt of some bright colour, but he is barefooted, and bareheaded. He does not mind the hot sun.

The Little Brown Boy's House

He lives in the strangest kind of house. It is built of bamboo and thatched with palm leaves. But it is built on a platform over the mouth of a river. He helped his father to build it. They cut down some big poles in the forest, and pushed these into the sand and mud until they were quite firm. Then a kind of platform was built on these, and a little house on this platform. Then pots and mats were put inside and the house (Fig. 31) was ready.

When the little brown boy goes to sleep at night, he can hear the water rippling beneath his hut. He can look down between the poles that form his floor and see it.

Underneath the hut are kept two canoes. The little brown boy and his father love to paddle about in these. They like to be on the sea, because a thick green forest grows all over their land. Inside the forest it is very damp and hot. There is hardly any room to move.

A Forest Called a Jungle

If they try to cut down the forest, it grows again very quickly. There are such heavy showers of rain, and then such hot sunshine, that plants of all kinds grow well. Some of the brown people grow rice, but they find it hard work to keep the trees and creepers and moss and ferns from growing among the rice.

The little brown boy does not often go into the forest. When he does, he keeps a careful look out for tigers and other animals. When he grows up, he means to hunt tigers and elephants. In the meantime, he helps his father to fish.

When he is hungry, he runs up the carved steps to his house. His mother or sister will surely give him something to eat; perhaps some rice, or fruit, or fish.

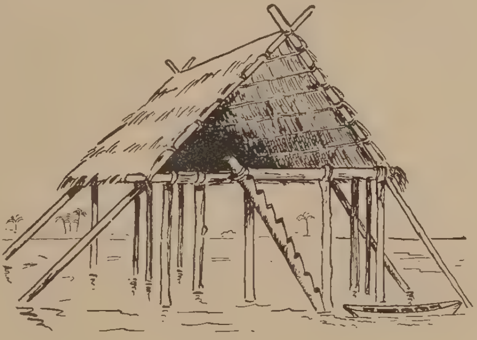


FIG. 31

The Little Brown Boy's House Above the River

No School

The little brown boy does not go to school. He cannot read or write. But he can swim and dive well. He knows how to fish and hunt animals in the forest. He can carve, too. He has carved a pattern on his canoe. He helped to carve the steps that lead up to his house.

Can you make the little brown boy's house, perched up on poles? What will you use for poles? What can you stick them into to make them stand firm? How will you build the platform? It is difficult to make a strong platform. The little brown boy and his father are clever builders. Perhaps you can make their canoes. Here are some corks which will be very useful.

LITTLE OLAF, A FISHER-BOY OF NORWAY

LITTLE OLAF, like Marie, lives in a land of mountains. All around his house, in Norway, they lift their great white heads. He would feel very strange in a flat land like Holland.

His house is built by the sea. The sea runs into the land between the tall mountains. Olaf's house is built on a rock by the side of a tall mountain.

Olaf catches fish in the quiet sea that flows inland, and sometimes he goes out in his father's fine boat, for his father is a fisherman. When he goes out to sea with his father he catches great fish like the cod-fish, and fish of all kinds. (Fig. 32.) He knows all the different ways there are of catching fish.

Fishing in the Fiords

When he goes cod-fishing with his father, he uses a line with a little bright metal fish on the end. This attracts the cod-fish, who swallows it, and then he is quickly pulled on board the boat.

He and his father stay away for weeks when they are cod-fishing. They live in huts on some little islands. As fast as they catch the fish they take them ashore, cut them open, and hang them up to dry. You would like to see the long lines of cod-fish hanging up to dry. Olaf and his father very soon have a good supply to take to market to sell. You can see Olaf and his father catching cod in the picture. (Fig. 33.)

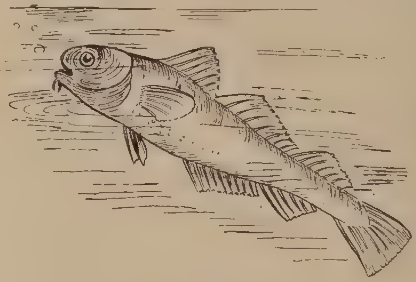


FIG. 32

The Cod-fish Little Olaf Catches

Sometimes Olaf catches herrings in the little

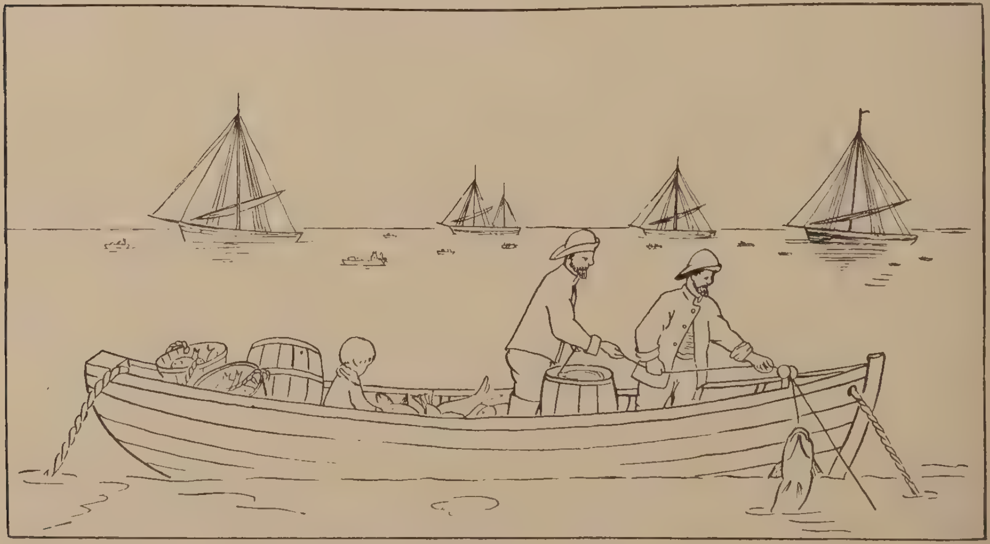


FIG. 33

Little Olaf out Cod-fishing with his Father bays near his home. Sometimes he goes out to sea to catch them. Herrings swim very near the surface of the water, and a great crowd of herrings like to swim about together. Olaf can see the herrings coming when they are a long way off, because their scales glitter so brightly on the surface of the water. They look like fairy fish. He catches these with a net that floats on the surface of the water. The herrings swim into it and get caught by their fins.

Once Olaf went far north in a boat, looking for whales.

He Enjoys Fishing

Olaf's mother and sister are always anxious when he and his father are out at sea. Sudden storms come on, and big waves sometimes overturn the boats.

But Olaf is glad he is a fisherman. How else, he wonders, could he get money to buy his little sister pretty things and food? There are so many rocks in Norway that there is little earth for grass, so that the people cannot keep many cows or goats; nor can they grow much corn, for there are hardly any flat fields. No wonder Olaf loves the sea. It gives him food. He loves the mountains, too, for on their steep slopes grow great pine trees, and from these he and the people of Norway build their beautiful boats.

Winter in Norway

In winter it is very cold. Snow lies everywhere, and the sea that washes the rock on which Olaf's house stands is frozen. But Olaf does not mind the snow or ice. He can skate, he can walk and jump over the snow on the mountain side in his long wooden snow-shoes. He can still catch fish, for he breaks two or three holes in the thick ice and drops his line through.

In many parts of Norway all sorts of merry games are played in winter. Olaf hopes one day to join in these winter sports, so he practises jumping whenever he can.

Olaf's little sister likes the winter, not so much for the sports, as for the tales they read around the fire about the brave seamen of olden days, who sailed far away, to seek adventures, in boats built by themselves from their famous pine trees.

Can you model great mountains running right down to the sea? Make a few rocks to put Olaf's cottage on. Make the sea wind into the mountains to form a long bay. Perhaps you can make a fishing fleet?

Play you are fishermen going cod-fishing.

(*See notes on a Fishing Village in the Section on Construction of Various Types of Country, page* 741.)

LITTLE MARY OF AUSTRALIA

LITTLE MARY lives far away in the huge land of Australia. You know the earth is a big round ball. We live on one side of it, and little Mary lives on the other. When Mary is getting up, we are going to bed, for when the sun shines on the other side of the world, in Australia, it is night-time here. And when we have the sun, it is dark in Australia.

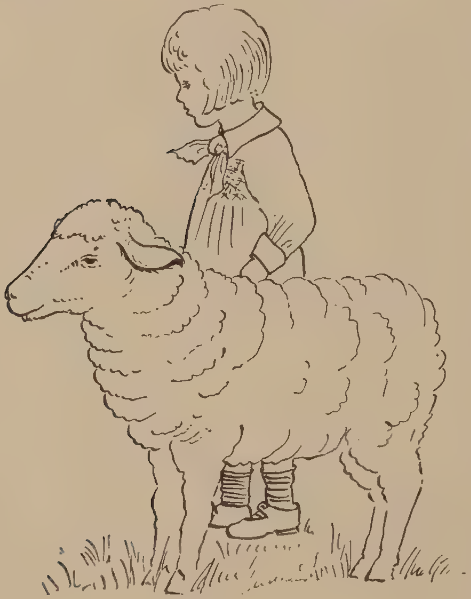


FIG. 34

Little Mary of Australia with one of her Father's Lambs

Little Mary dresses and looks just like us, for the Australians all came from Britain to live in this new land, not so very long ago. (Fig. 34.)

Her father has a big sheep-farm, and nowhere in England can you see as many sheep as he has. Little Mary has never been able to count them. There are so many sheep that Mary's father and his men have to ride on horseback to visit them all.

Sheep-shearing in Australia

Every spring the sheep are sheared. The workmen used to do the shearing by hand, with large scissors. But when there are so many sheep, it is hard work. Now Mary's father has a wonderful machine that cuts off the heavy wool close to the body. This saves much time. And the sheep are glad to lose their heavy wool before the warm days come.

Then the wool is sorted out, packed in sacks, and taken to the nearest station to be sent away. A great deal comes to us, and we use it to make all sorts of clothes and materials. Your warm sweater and winter clothes are made of wool that came, perhaps, from little Mary's sheep farm. (Fig. 36.)

Once, little Mary's father used to work in a gold mine. There are many gold-mines in Australia. But Mary likes the sheep farm better, and so does her father.

Mary is a happy little girl. All the fruits we love, grow well in Australia, and many other fruits besides; and there are beautiful seaside places to visit.

But if we went to visit her, I think we should be most interested in the kangaroo that sometimes comes hopping into her father's great fields, among his sheep. Its hind legs are much longer than its front legs, so it travels along in great bounds. It has a long tail too. The mother kangaroo has a little pocket in which she carries her baby. (Fig. 35.)

If Mary comes to Britain—and she means to one day, for she and her father call it "home," she will be most interested in the snow and ice in winter. She has never seen snow in Australia. It will take Mary six weeks in a big steamer to come to us.

Can you make a big round ball of plasticine for the world? Show where we live on it, and where Mary lives. Can you make a great Australian sheep farm on your sand-table? Make plenty of sheds for shearing the sheep, and sorting the wool. You will have to work hard to make enough sheep. Can you model the kangaroo in plasticine? (*See also* page 721.)

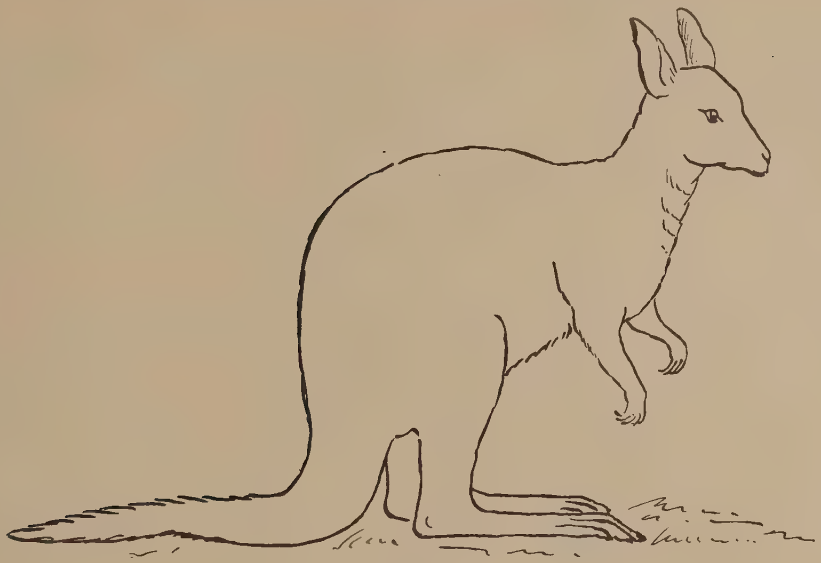


FIG. 35

The Kangaroo of Australia

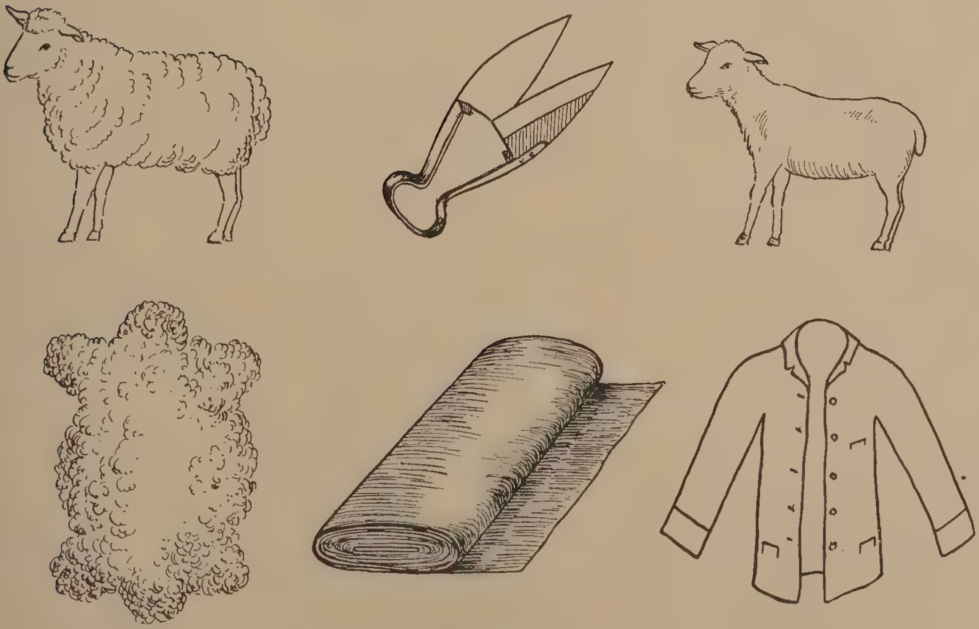


FIG. 36

Where Wool Comes From and What it Makes

TALKS ON LOCAL GEOGRAPHY

IT has been pointed out already, in the *Section on A Year's Work*, how the early lessons in history and geography—that is, the early study of social life—must be based on the child's own experiences. In making their small inquiries about what they see and come in contact with in their environment, they are studying history and geography.

It is impossible for the child to picture the society of other countries, until he has first learned to observe the simple, but outstanding, elements in the landscape and society about him.

Talks on local geography, therefore, form a fitting beginning to all geographical teaching—these talks being based on topics in the plane of the child's experience, and chosen from his immediate surroundings.

Informal Talks

They will include some of the following topics—

1. Life in a large city.
2. Life in a village.
3. Life on a farm.
4. The clothing we wear—especially if there are cotton or woollen factories in the neighbourhood.
5. Our food—shops and factories, etc.
6. Coal mines.
7. The life of the fisherman.
8. Hills and rivers in the neighbourhood (*see* following sections).
9. How the occupations of others help the family needs and home life. The occupations most familiar to the child should be first related—

Carpenter
Plumber
Newsboy
Milkman
Grocer
Farmer
Vanman

Baker
Tailor
Coal merchant
Road mender
Printer
Shoemaker
Hardware merchant

Below are some suggestions for talks on some of these topics—showing what points to emphasize, what illustrations to use, and what handwork or expression work can be done.

Suggestions for a Series of Talks on City Life

1. The streets—where they lead—a "residence" street and a "business" street (when possible, children should be taken to see them). How they are kept clean—lights, pavements, etc. Things seen in the streets. (*See* illustrations for street scenes, pages 366, 367 and 368.)

2. Houses and buildings in the streets: shops, houses, school, hospital, fire-station, public-baths, hotel, garage, station, theatre, picture-house. Materials they are built with—bricks or stone.

3. Shops of all kinds: talks on shops will lead naturally to the *Section on Journeys to Other Lands*, page 724, for the children will begin to inquire where all the things come from that fill the shop windows.

4. Means of transport in the city—trams, buses, trains, wagons, motor-lorries, motors, etc. The special use of each conveyance.

Pictures to Use

Pictures should be used in connection with these talks, to aid the children in oral expression and give them a clearer understanding of the subject-matter. For example, pictures of "residence" streets and "business" streets, as in Fig. 37.

Pictures of Different Buildings—a fire station, as in Fig. 38, a church, Fig. 39, a post office, Fig. 40.

Pictures Showing Traffic—motors, lorries, etc., and pictures of people seen in the streets—postmen, policemen, etc., as shown on pages 366, 367, 368, and on page 724.

All these talks are followed by expression work in handwork time. From blocks, bricks,

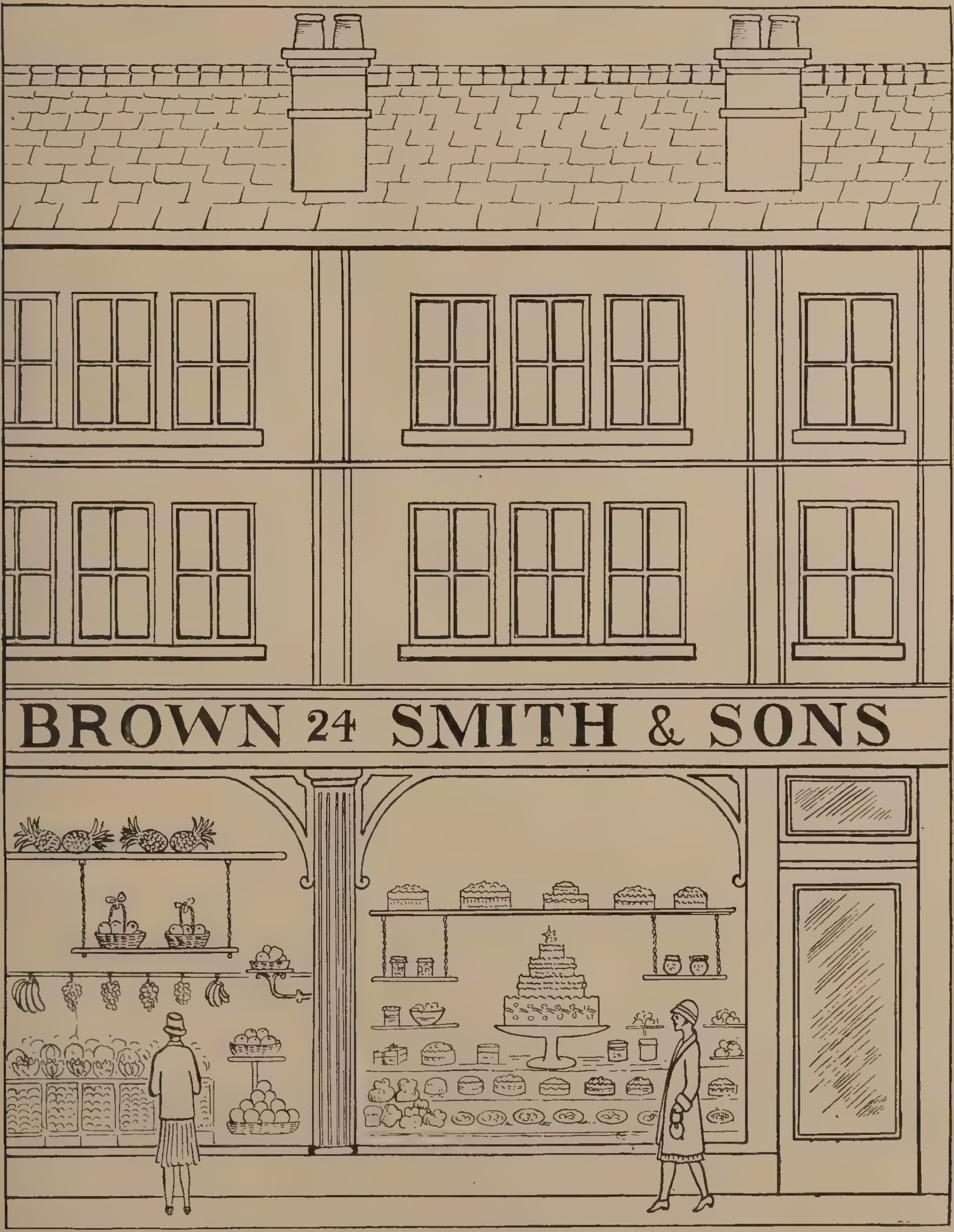

BROWN 24 SMITH & SONS

FIG. 37
A "Business" Street

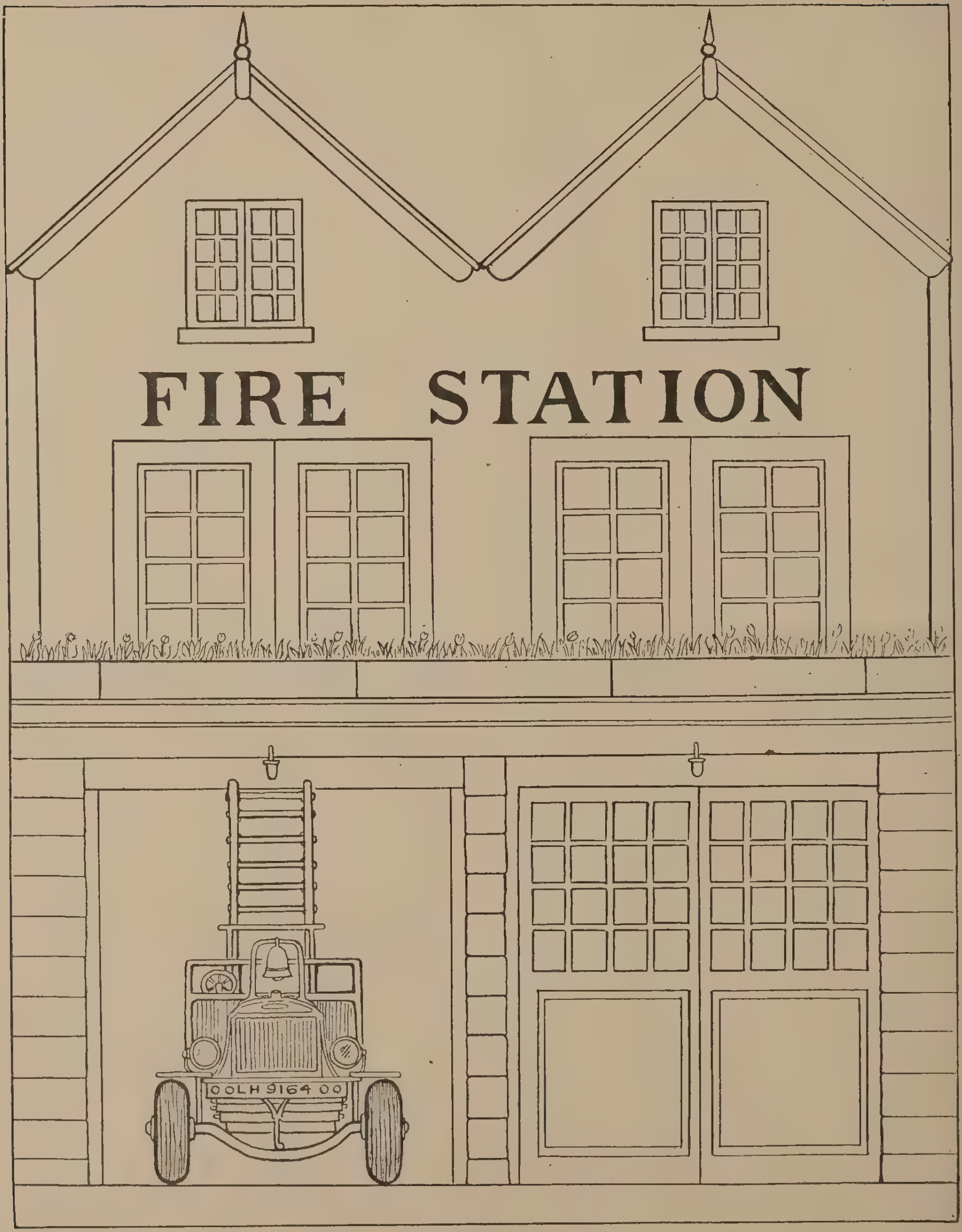

FIRE STATION
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FIG. 38

A Fire Station

and boxes, the children build street scenes. (*See Section on Building with Bricks*, Vol. IV.)

Building with Bricks

Children who have been allowed to play freely with blocks, and have made engines and cars, are able, at six years of age, to lay out their tracks and streets in accordance with the points of the compass. (More is said about this on page 724); they build representative city buildings, with enough of the outstanding

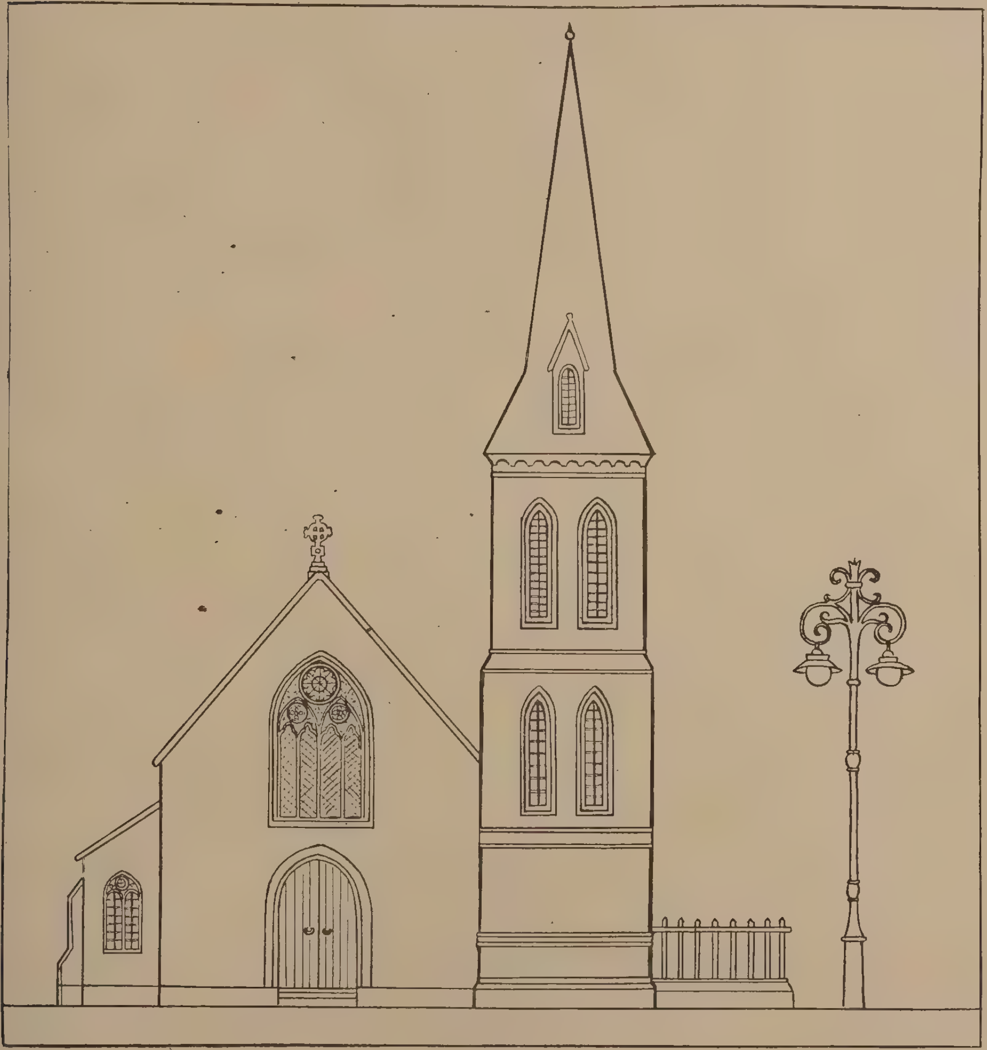


FIG. 39

A Church

characteristics that they are recognizable; they distinguish between, and imitate, the sounds of different types of street noises, whistles, escaping steam, crunching wheels, and so on; they make different types of people to take part in the street activities.

A list of buildings may be written on the blackboard, or on a chart, as the children suggest them. Each child, or group of children, can then choose the building he or they would like to make.

The equipment of the buildings will lead to the use of all kinds of materials, and many forms of manual arts. It can be seen from these few suggestions that abundant opportunities are offered for oral work, group composition, and dramatization.

Points to Emphasize

The following points should be specially emphasized in these talks on town or city life.

1. What the community (that is, all the people) furnish for the benefit of everybody—
   - (*a*) Pure water.
   - (*b*) Beautiful parks (*see Section on Construction of Various Types of Country*).
   - (*c*) Suitable playgrounds.
   - (*d*) Clean streets
   - (*e*) Schools
   - (*f*) Hospitals
   - (*g*) Homes for the friendless
2. What each of the following does for children—
   - (*a*) Policeman (especially helping children to cross roads)
   - (*b*) Fireman
   - (*c*) Street sweeper
   - (*d*) Postman
   - (*e*) Health officer, etc.
3. Comparison of city homes with—
   - (*a*) The Eskimo's home
   - (*b*) The farmhouse, etc.

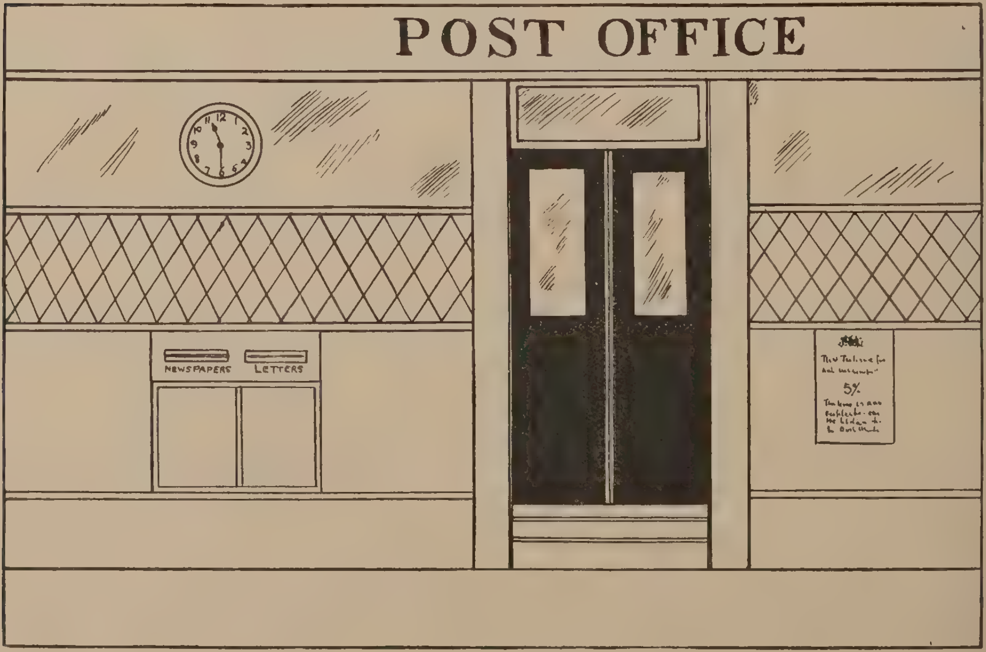


FIG. 40

The Post Office

Suggestions for a Series of Lessons in Connection with Farm Life

(*See also the Section on A Year's Work.*)

These lessons may be based on the child's own experiences, even if he does not live in the country—

The objects of these lessons should be to give the children clearly defined ideas of—

(*a*) Open spaces—fields.
(*b*) How farm animals really look and act.
(*c*) How seeds and plants grow. (*See Nature Study Section.*)
(*d*) The appearance of fruits, vegetables, grain, and other farm products.
(*e*) Simple methods of transportation: wagons, trains, etc.

These ideas may be gained locally in the following ways—

(*a*) By visiting a large park, so that the children can visualize green fields.
(*b*) By visiting a market.
(*c*) By planting seeds in window boxes, and school gardens.
(*d*) By noticing the fruits, etc., they see in shop windows, or at school, or in the market.
(*e*) By noticing barrows, wagons, trains, etc., that carry farm goods.

Suggestions for Lessons on a Factory in the Neighbourhood

A Woollen Factory—

1. Begin with children's new, warm, winter coat or woollen scarf, etc. Teach children to distinguish wool from other materials by touch when blindfolded.

2. Associate pictures of sheep with those seen in the park or fields. (*See* notes on the use of pictures, p. 716.)

3. Show the children specimens of new wool. Twist raw wool into a thread. Let the children unravel a coarsely woven piece of woollen cloth. Begin exercises in weaving. (*See Section on Handwork.*)

4. Show picture of a factory. Let children build one of bricks. Let them bring wool to the factory. Fig. 43 shows useful pictures which can be used for drawing, paper-cutting, and modelling. The children may think of other pictures that they will like to see drawn on the board, or try to draw themselves, balls of wool, coats, sacks of wool, etc., etc.

5. Let the children recite "Baa, Baa, Black Sheep," and "Little Bo-peep," read to them stories about sheep and lambs. (*See Story of "Little Mary of Australia" in the Section on Children of Other Lands.*)

Sand Table Occupations

In all these talks on local geography, the sand table will play an important part, as the following suggestions show—

1. On the sand table a co-operative model of a farm can be built up. A good way to begin is with a long road (if possible it should be a familiar road), leading out into the country where the farmer lives. Let the children make the road through the middle of the sand table.

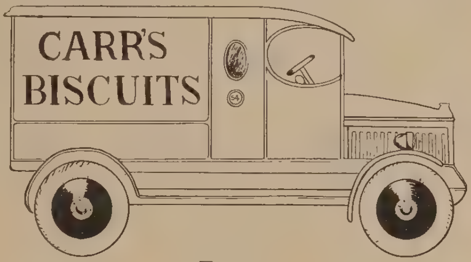


FIG. 41
A Motor

2. The route of the milkman, or postman, can be modelled in the sand to show the roads and streets along which he travels. If he has to cross rivers, these can be shown, and bridges modelled.

3. The route of any excursion made by the children can be modelled in the sand. Such work helps the children to understand the world around them. Moss, grass, toy animals, paper dolls, and building blocks can be used to make the scene real.

The Use of Pictures in the Geography Lessons

Pictures should play a very important part in these talks on local geography, and in all geography lessons.

The following hints on the use of pictures in geography lessons will be valuable to the teacher.

1. *How to Select Pictures*—

(*a*) Young children prefer coloured pictures to photographic reproductions. They prefer primary colours, and the warm colouring of nature.

(*b*) They want action in a picture. To please them, the picture must tell a story.

(*c*) They are easily confused by much detail in a picture. The teacher should, therefore, choose for

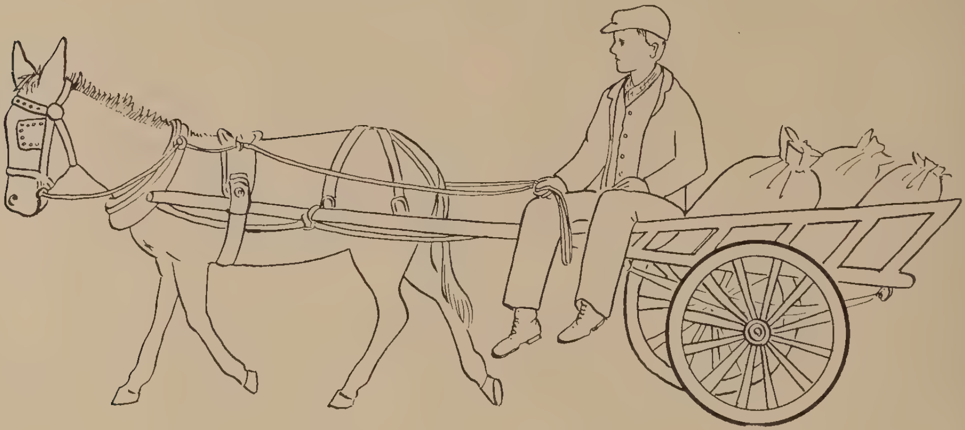


FIG. 42

Seen in the Streets

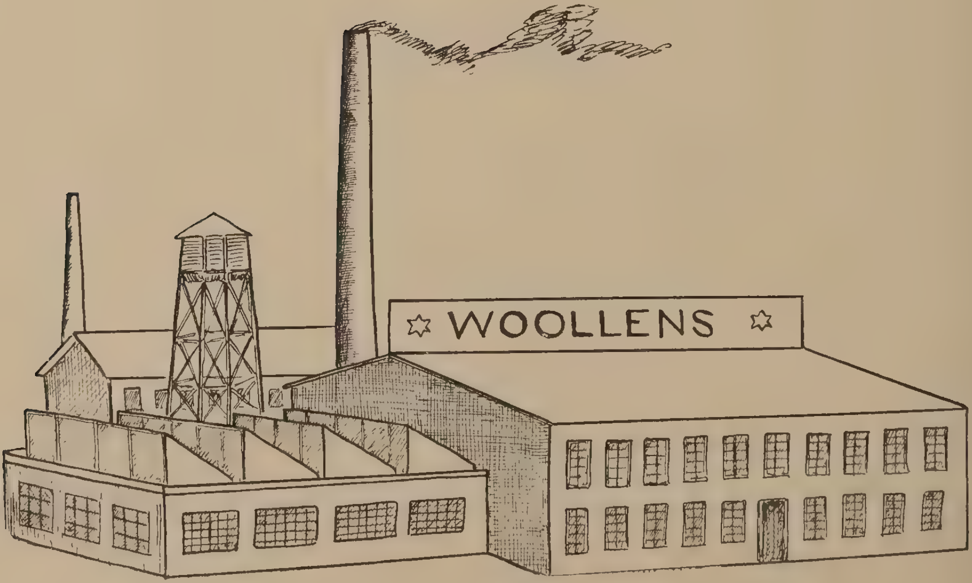


FIG. 43

The Story of Wool

them pictures drawn with large, simple lines, and only such detail as helps to interpret the story.

(*d*) The teacher should avoid impressionistically coloured pictures, poster pictures heavily printed in black and white, merely decorative illustrations, and all photographic illustrations, unless they tell stories. Illustrations in black and white that tell a story simply, and in a human way, quickly stir the children's imaginations and produce valuable educative results in keener realization, increased curiosity, and added zeal to learn more. For example, pictures of ploughing, sowing, reaping, churning, feeding chickens, going to market, etc., etc. The advertising sections of certain papers are often very valuable to teachers for finding their pictures, e.g. pictures of soaps, cereals, chocolate, woollen goods, china, etc., etc. These are most helpful in the geography lesson.

(*e*) One picture, well used, is better than a great collection that may only tend to confuse or mystify the child. Even the best are quite likely to give the children incorrect ideas of size. It is for this reason that it is so important to begin with local geography, and show the children pictures of familiar scenes. The church in a picture, they see at once, is very much smaller than the real church.

Relative Sizes and Distance

After giving the children many opportunities to observe and compare under skilful guidance, they begin to realize that objects in a picture represent only relative size, just as the representations on a sand table show relative distance. A picture of a hen and her chickens shows that the chickens are smaller than the hen; or a picture of a mother and a child, shows that the child is smaller than the mother, and so on.

But the child who has never seen a cow, is still in danger of inferring that a cow is probably two or three inches high, or the size of his closed fist because that is the size it looks in pictures. The teacher must necessarily be on the look-out to guard against these natural errors of childhood, and show a cow on a picture with a man or child.

Another possible error is this: owing to the lack of knowledge of the laws of perspective, objects shown in the background of a picture will not tell the real facts to a child. Thus a teacher must be ever on the guard against the error of supposing that, because a picture is quite clear to her in every respect, it is equally so to the child.

When using pictures, the teacher must question the children to see that the objects, or purposes, she had in using the pictures are really achieved, and select pictures that show clearly what is wanted, and nothing more. Constant comparison of pictures with well-known objects that can be seen or easily understood is necessary, when using pictures to give correct impressions of life in other lands.

Misuse of Pictures

The following are two common ways in which pictures are misused—

1. Far *too many* pictures are sometimes used. The children are interested in handling them, but the thoughts they arouse in the children, and the activities they suggest, have little to do with the subject the teacher wishes to make clear. This diffused interest and thinking hinders the children from forming clear ideas.

2. Pictures are often chosen that are excellent from the point of view of art, but are unsuited to the child's stage of development, because they are so far removed from his ideas of everyday life.

JOURNEYS TO OTHER LANDS

THE teaching of geography really begins in the Infant School by teaching direction. This teaching starts at three or four years of age, when the children learn to go about the school building and know where they are in relation to their own room. These excursions to different parts of the school building are important journeys.

The children of five years of age go out into the street, and know the streets in relation to the school. They learn the names of the streets, and the position of their homes in relation to the school. Their buildings of streets and houses with blocks are correct, as far as direction is concerned. (*See the Section on Talks on Local Geography*, page 716.)

Children of six and seven years of age, if they have been allowed to use *adaptable* material and interest themselves in the world around them, are able to begin map-making on the sand table, or with plasticine, or on large sheets of paper spread on the floor.

On sheets of paper they can paste buildings (standing up at first ; later they can draw them), etc., and so trace out different walks with which they are familiar.

Points of the Compass

In the Nature Talks (in Vol. IV), children will have learnt about the sun and have some idea of north, south, east, and west. (*See* also page 135.)

Although the child is at this early stage not interested in the exact situation of far-away countries—countries beyond the sea—he is satisfied to know that far away in the north there are cold countries, away in the south there are warm, and even hot, countries. To the east and west are countries very much like his own.

This interest in hot and cold countries far away is linked up with the children's interest in ships. Indeed, the one great interest that holds children, especially boys, during the first six or seven years, is the interest in boats. Boats soon become prominent in many play schemes. No pond is too small for a paper boat.

If the children live near a river, or a harbour, or the seashore, their interest is perhaps still greater.

Boats and Their Cargoes

If children start with an interest in boats, they not only spread their inquiries further

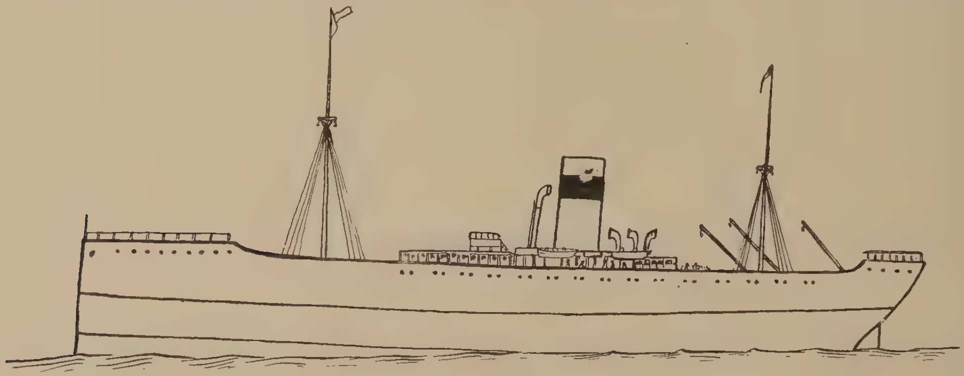


FIG. 44

A Cargo Steamer

about boats, but also they begin to make inquiries about kindred subjects. What do boats carry? What do the trucks carry that unload at steamship docks, and so on.

Boats are a good basic interest for a study of geography, and they can be linked up with the children's study of shops, and their dawning sense of direction or map-making.

Children will enjoy a talk about what fruits grow at home, and what come from abroad. They will be able to think of many imports. A list of goods that come from other lands can gradually be built up, and may be grouped under headings.

Foods: Oranges, bananas, coffee, tea, sugar, rice, spices.

Dress: Cotton and silk, for spinning and weaving and making clothes, furs. (*See Stories of Children of Other Lands*, page 690.)

Other Things: Gold and silver.

Children will enjoy building a fleet of boats to go to other lands to bring home goods.

They can build large steamers of bricks or blocks. Fig. 44 shows an illustration of a cargo steamer that may help the children in their building.

" *Travelling* " *to Distant Lands*

One steamer, perhaps, will be the " banana steamer " to bring home bananas.

The children will want to know where " banana land " is. They will probably quickly decide that it is a hot land. One part of the room, say the middle, is chosen for home (or the British Isles), the north of the room leads to the cold lands, and the south represents the hot lands; so in this way the children know in what directions their ships are to come and go.

Later on, they can represent the different countries (very roughly), by means of heaps of sand, or plasticine; on the sand table. A fleet of paper boats can then sail up and down carrying goods to and from other countries.

" *Trading* " *with Other Countries*

Playing in this way, children begin to realize that the country which sends bananas to us wants something in exchange. In a warm sunny land of beautiful fruit trees, there are not many factories, so the people in these lands are glad of all the things we can make in our factories—matches, buckets, beds, stuffs, typewriters, etc. Children will enjoy making this list themselves.

Sometimes the children can take their ships to the north lands to collect furs, sometimes they can take them far south and east to bring home rice and tea, etc. Some of these journeys to other lands can be made in connection with the stories told them in the Section on *Children of Other Lands*.

CONSTRUCTION OF VARIOUS TYPES OF COUNTRY

ALTHOUGH the child in the Infant School must begin his study of geography with the things he sees around him, even at this age his interests and social needs carry him beyond the range of observable realities. He must learn some facts beyond first-hand observation, not because our scheme of work in school prescribes it, but because social life forces these facts on him.

He gets a first-hand idea of his own village, or the town where he lives, but he also comes into contact with the fact that his village is in a land where there are other villages to which people travel by train, that there are other lands across the sea from which letters come. He learns the names of places where uncles, aunts, and cousins live. If he lives in the warmer south, he builds up a concept of a cold winter in other lands by means of a combination of pictures, and descriptions, and occasional experiences of cold weather and snow.

Pictures, and talks and the models that are now going to be described, are intermediate symbols between realities and abstract concepts. They aid in building concepts, however inadequate and approximate such concepts may be.

Building-up Concepts of Unknown Things

In this way, and by abstracting qualities from real natural history around him, the child forms concepts of nature in other lands. For example, the cat gives the child some idea of the tiger. By this means a six-year-old child may acquire concepts of elephants and tigers which will result in the immediate recognition of these animals when he is taken to a zoo or a circus.

Thus we see that around the abstract concept there has been gathered a more or less extended association of facts, not learned by first-hand experience.

These considerations abundantly justify allowing the child to depict, on the sand table or in various materials, different types of country that, although unfamiliar, are bound to come within his knowledge through his social life—his intercourse with others.

(A) ARCTIC LIFE

IN turning to a land where there are no farms and no green grass, the child is filled with wonder as he is told of the life of the Eskimo (*see* page 690).

The Eskimo's country, habits, and life in general are so different from ours, that the little one will delight in creating a village of ice and snow.

Arctic life may be represented in many different ways.

1. *On the Sand Table*

The sand may be levelled down, and covered with sheets of cotton wool. In the middle, or at the side, a space is left for a piece of cold grey-blue paper to represent the Polar Sea. Small blocks, or match boxes, are covered with wadding to represent ice floes on which the seals and polar bears "float."

At one end of the table large blocks are placed under the wadding, to make a hill for the Eskimos to coast down in their sledges.

Jagged icebergs are cut from drawing paper, some with long points, and some with short. These are placed along one edge of the sand table (as shown in Fig. 45). They will stand

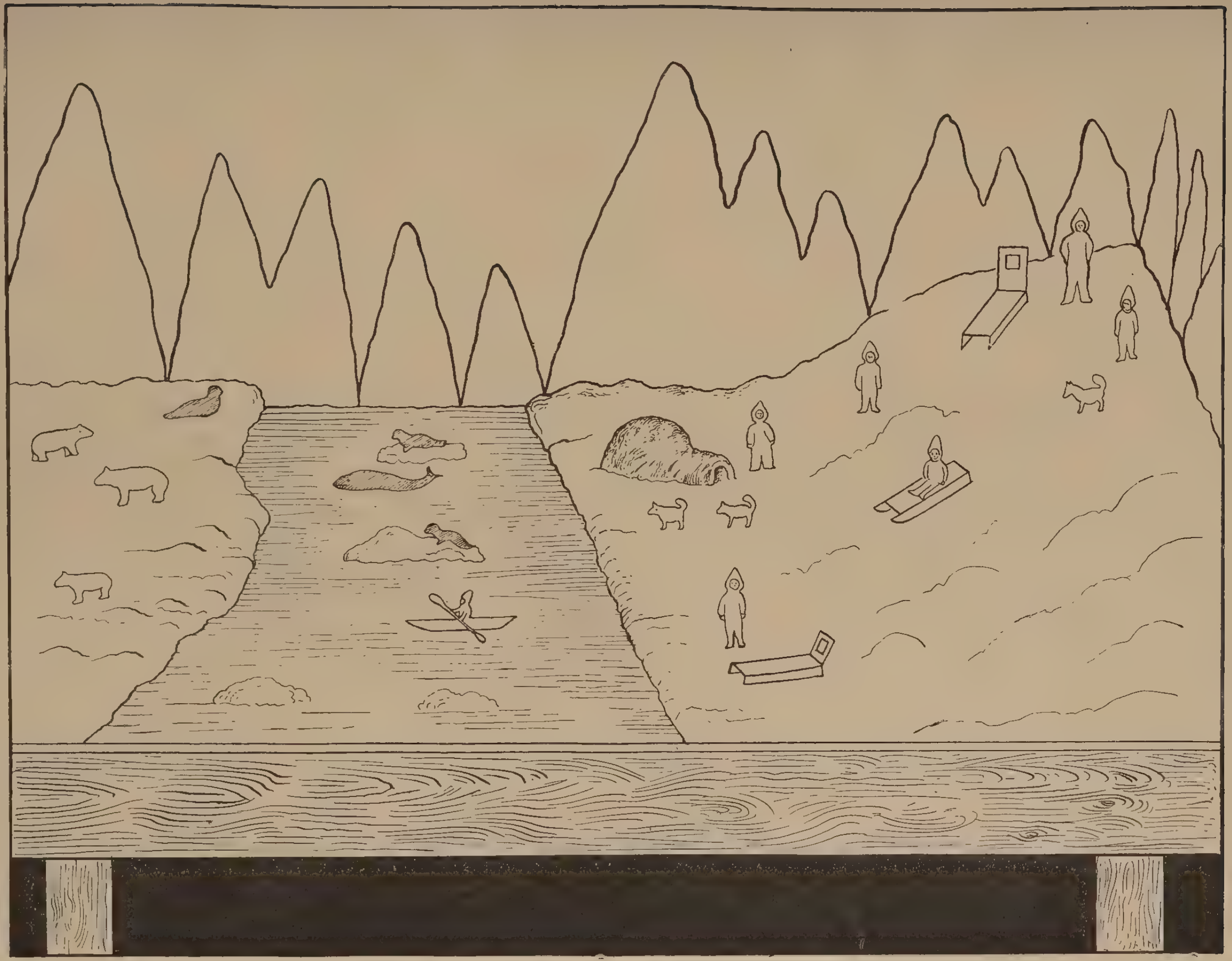


FIG. 45

Child's Model of Arctic Scene on the Sand Table

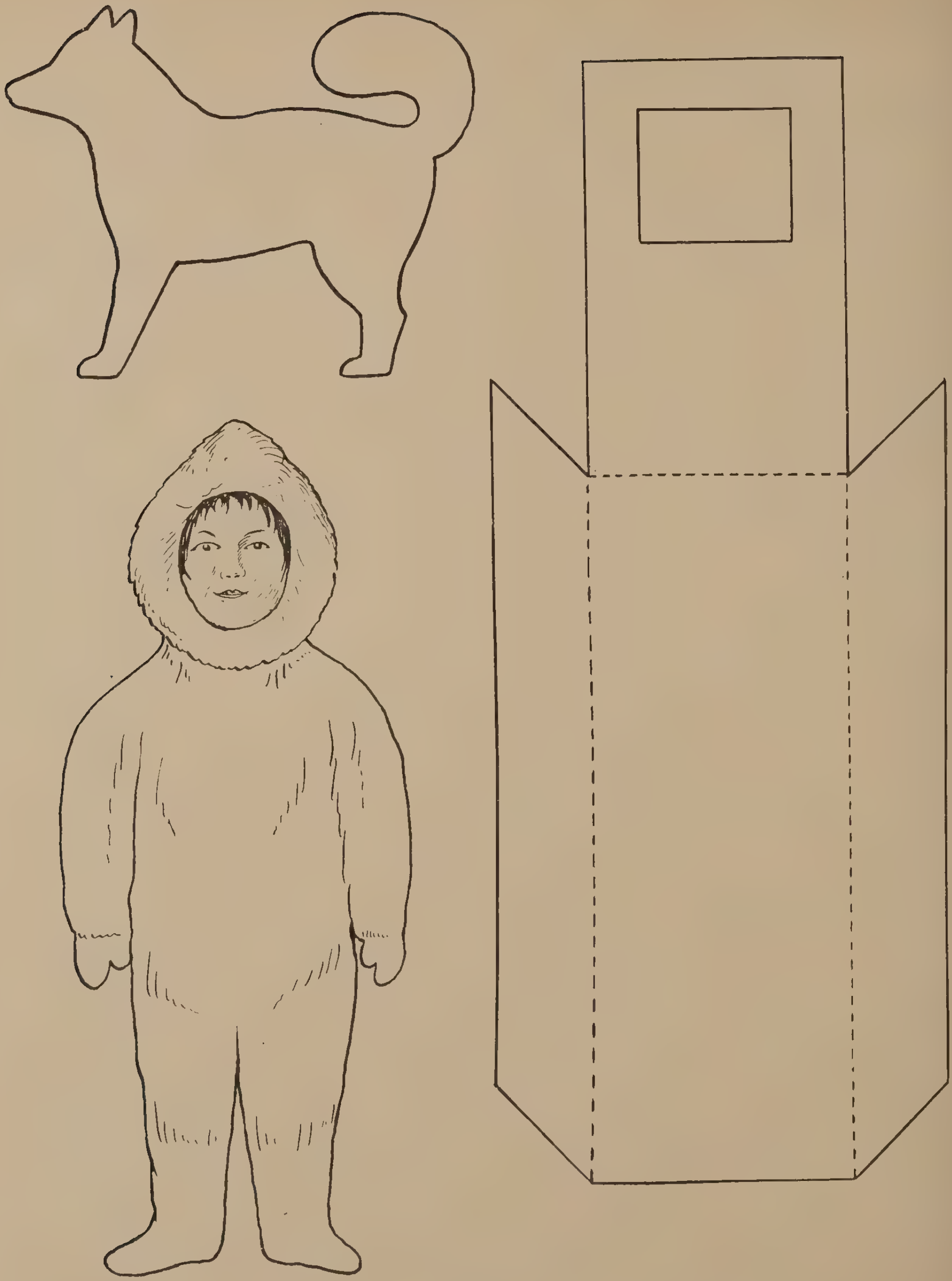


Fig. 46

An Eskimo, Dog, and Sledge, to be Cut from Paper
Bend the Eskimo so that he Sits in the Sledge

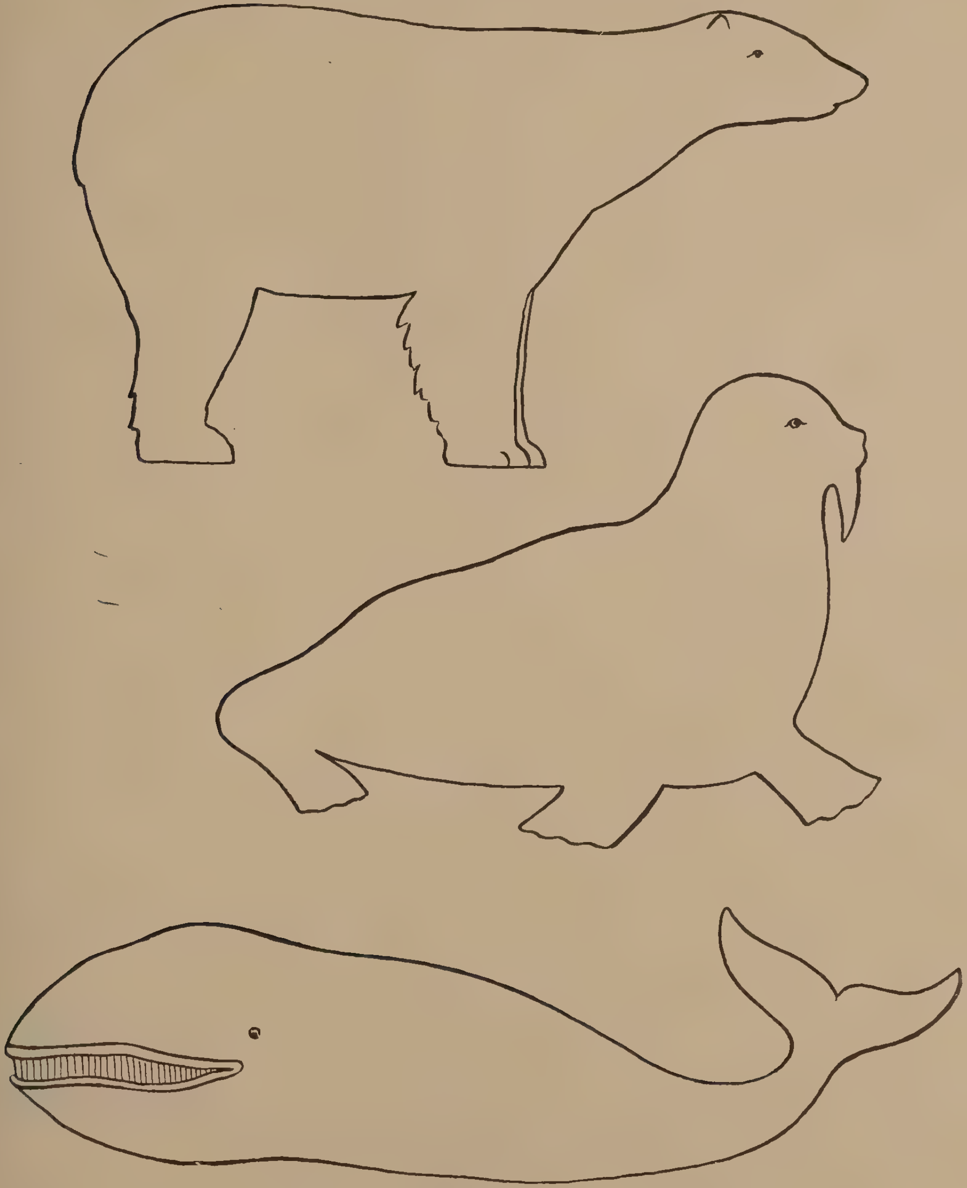


FIG. 47

Animals of the Arctic Regions
Simple Shapes for Cutting Out

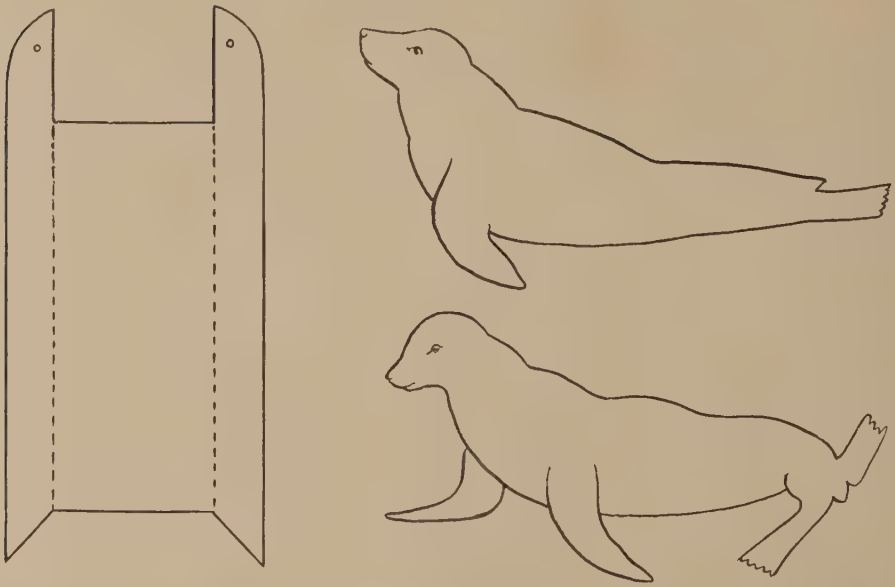


FIG. 48A

Some Seals for Cutting Out and Pattern for a Simple Sledge

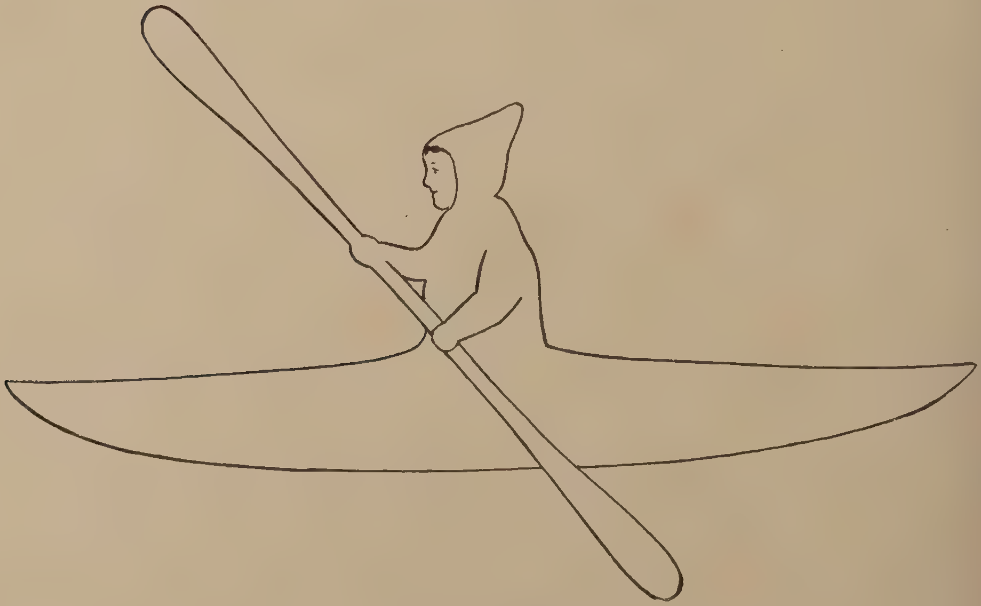


FIG. 48B

An Eskimo in his Kayak

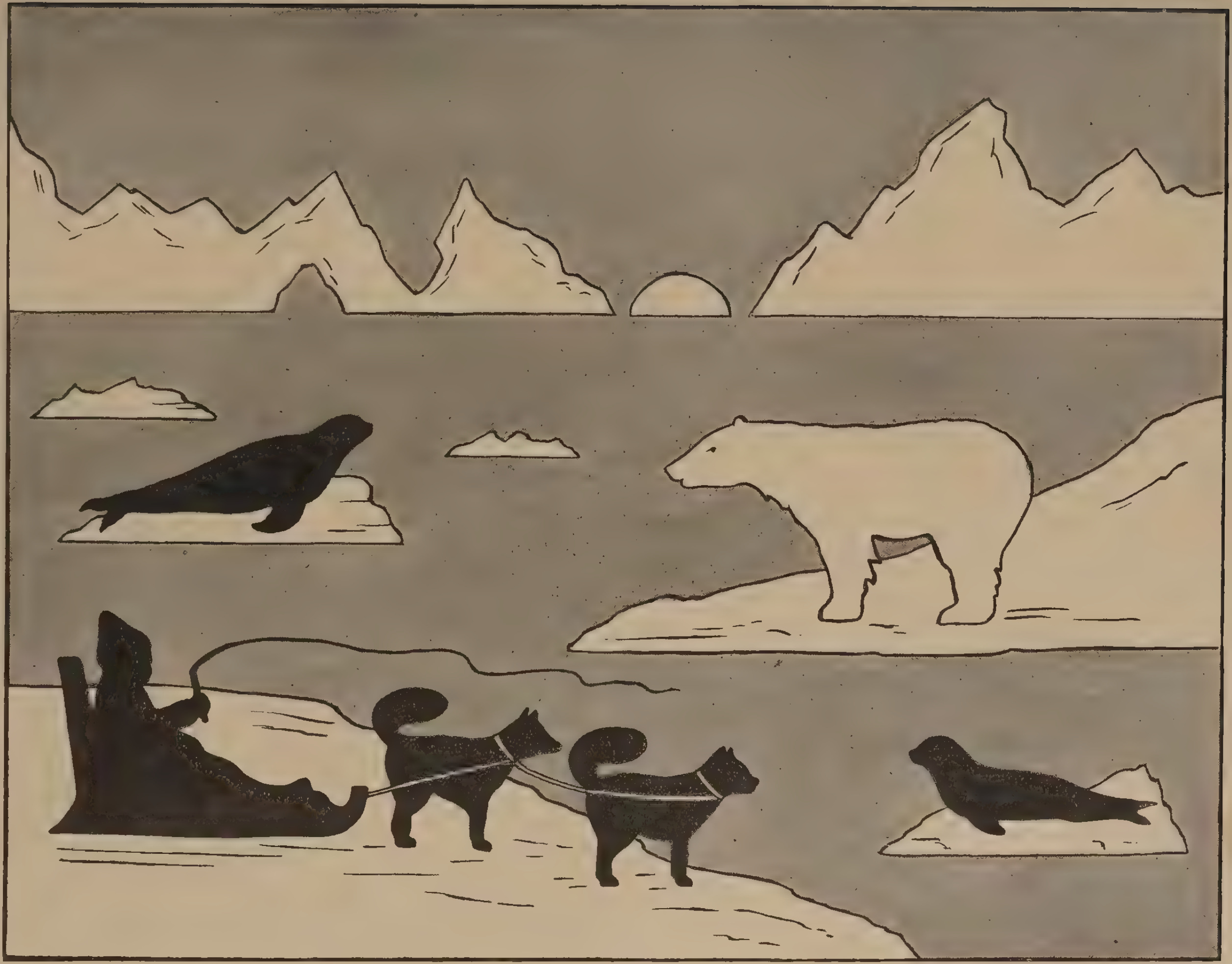


FIG. 49

An Arctic Scene, Constructed in Paper Cutting up easily if they are inserted in the sand beneath the wadding. These icebergs will produce a really cold effect.

The Eskimo's Hut

The Eskimo's hut, or huts, may be made by groups of children working together. As they make the "ice" bricks, of clay or plasticine, they are placed in a circle, an entrance being left, the teacher will help the children to build their bricks up to form the igloo. Clay must be carefully plastered inside and out to keep the bricks from falling apart when dry. Bits of cotton wadding may be laid on the wet clay for a snow effect, or when the clay is dry, powdered chalk or salt, may be sprinkled on the igloo.

The Eskimos may be modelled in clay and dressed in cotton "fur," or they may be cut out of paper and coloured or have "suits" made for them from cotton wadding, or some soft material.

Children will probably like best to make their Eskimos of clay, so that some can be in a kneeling position ready to enter a hut, some sitting, some fishing, etc. Fig. 46 gives a pattern for a paper Eskimo.

Animal Life in Polar Regions

The animal life of the Arctic may be made of coloured plasticine, or clay (painted), or paper. If the animals are made of paper, the seals and whales should be cut from very dark grey or black paper, walruses from grey paper, polar bears from white, or pale yellow paper, and dogs from light brown paper. Figs. 47 and 48A show patterns of these animals.

Fig. 48B gives a pattern of an Eskimo in his boat or kayak. Slits are cut in the blue paper, to insert the whale, and also the cut-out of the Eskimo in his boat (as there is sand underneath the blue paper, these figures will easily stand).

The other figures may be made to stand by means of strips of drawing paper, pasted to the back.

Sledges are cut from patterns hectographed on drawing paper, like that shown in Fig. 46, and the pattern of the Eskimo given in Fig. 46 may be cut out and pasted on it.

Some simpler forms of sledges may be folded by the children themselves, according to their own ideas. Fig. 48A shows a sledge that little ones may think of themselves. The illustration shown in Fig. 45 gives some idea as to what the children's finished model will look like.

2. *Paper Cutting and Chalks*

Besides building up the Arctic scene on the sand table, the little ones will enjoy making, or trying to make, a picture of Arctic life in paper-cutting or chalks. Fig. 49 gives an example of an effective Arctic scene in paper cutting.

A large sheet of grey paper represents the sky and sea. The icebergs and floes are cut from white paper and pasted on this. The bear, seal, and dogs are cut from patterns, or the children can use the figures they made for their sand table model.

They should be encouraged to cut the Eskimo on his sledge freehand. When this is mounted, lines are drawn to harness the dogs to the sledge.

The sun may be chalked in red or cut from red paper. Chalk is used to make the reflection of the sun in the winter. Now will be the time to talk to the children about the wonderful "midnight sun."

(B) THE DESERT

LITTLE ones of six and seven will enjoy setting up an Arab encampment on the sand table. This will both help to give them some idea of life in the desert, and also help them to understand and enter into the stories and descriptions of life in Bible days.

The method of approaching the construction of the model with the little ones will vary with the teacher, the stage of the pupils, and the special purpose for which the model is undertaken. Pictures, blackboard sketches, and talks will give the children some ideas.

The sand is heaped up on the sand table to represent the sand hills of the desert. If it is difficult to make the sand ridges high enough, a clay foundation may be used, or a foundation of crumpled newspaper.

In the middle of the desert a piece of blue paper represents the oasis; around it will stretch the high sand hills. It is important for children to realize how low the oasis is, compared with the surrounding country. Palm trees made of rough sticks or twigs from the garden, and green tissue paper stand around the pond, as in Fig. 51.

Palm Trees for the Oasis

Another way to make palm trees is to roll narrow strips of brown paper for the trunk of the tree, and fasten the strip by means of a little paste. Take care that the trunk is hollow. Next fringe a fairly long piece of green tissue paper, wind it round and round, fix it in the top of the trunk, and if necessary paste it in position. (Fig. 53.)

The palm trees will stand if they are stuck deeply into the sand, or into the clay foundation.

A background of sand hills and blue sky may be chalked or painted by teacher or children, though this is not essential.

Life in the Desert

In order that children may realize the kind of life lived in the desert, some time should be spent over talks about the tent and how it is built.

The teacher's model of an Arab tent will show the children how it is pitched. Rows of poles (say three rows of three poles) are driven into the ground to support an awning, or covering, which is usually made of woven black goat's hair. The awning is kept in place by means of cords tied to the edge, and to pegs or stakes driven in the ground. The tents are low so that the winds will not blow them over.

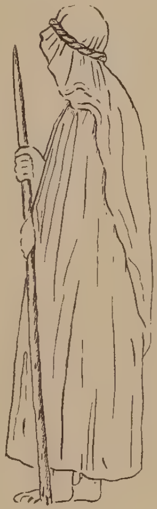


FIG. 50

An Arab

Enlarge for the Children to Draw and Cut Out

In such dwellings there can be no store house for food, and little furniture.

Food, clothing, and shelter all come from the animals which the Arabs take with them on their wanderings—camels (milk), goats (milk, meat, and hair for making tents), and sheep (wool for clothing, meat). For making the tent, the children may be given rough sticks or twigs for tent poles, a piece of dark material for the tent covering, fine string for the cords, and pieces of match stick for tent pegs.

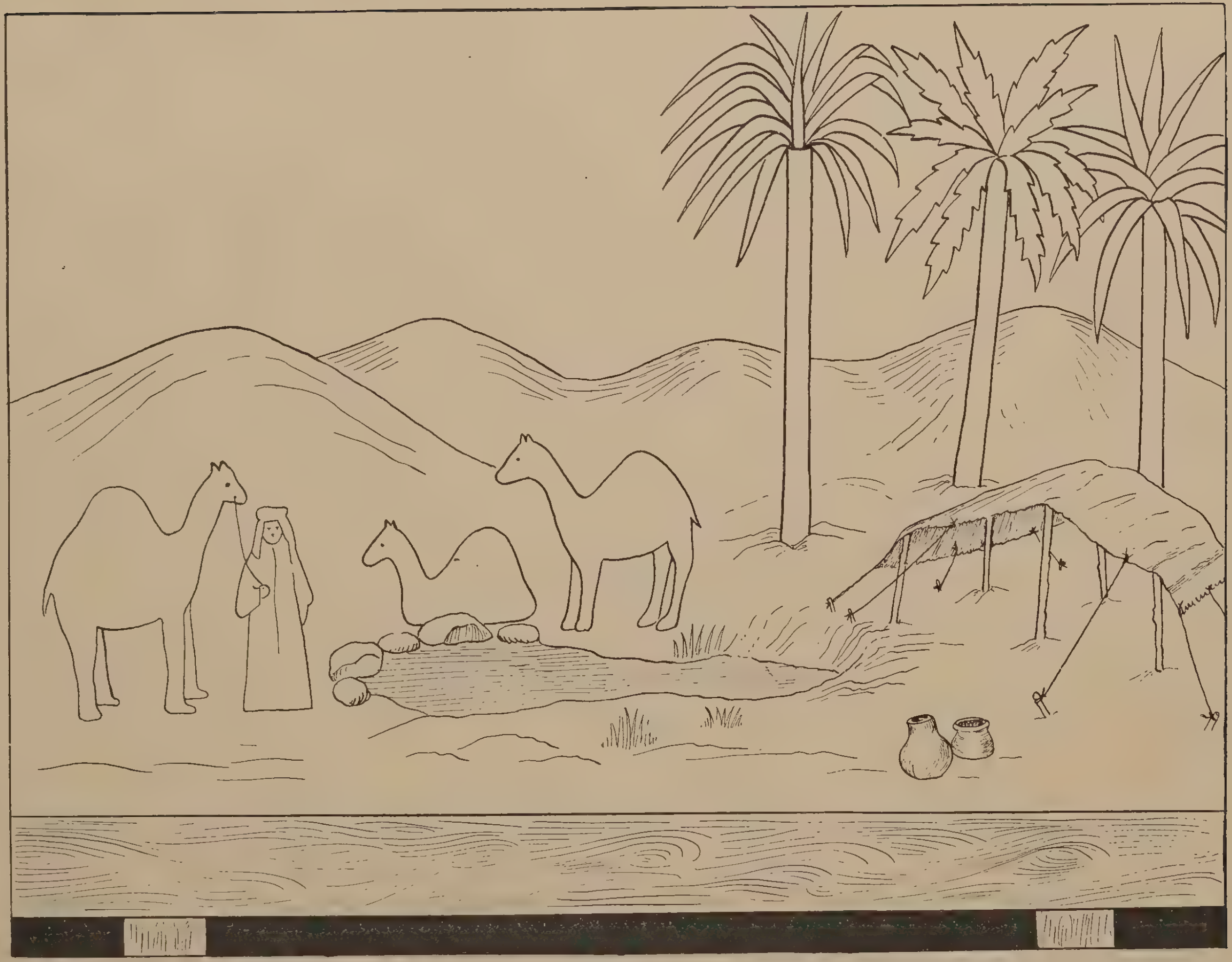


FIG. 51

Children's Model of an Oasis on the Sand Table

Notice how the tent is made

Each child may make a tent, and then place it in the oasis. This will be possible if each child is given a piece of cardboard. On these pieces of cardboard they place a thick layer of clay, stick in the tent poles, and fix the covering, tying it down with pegs

The Arab's Possessions

The tents may be furnished with a few rugs, a dish or two for cooking, and skins for carrying water, etc. These skins may be made from the fingers of kid gloves. As the Arab water-skins roughly resemble the shape of the animals they once belonged to, bits of the glove can be pinched in, to imitate legs.

Some of the sheep, goats, and camels may be modelled from clay, or plasticine, or cut out of paper and painted. If they are cut from paper, hectographed copies may be given the children. Figs. 9 and 52 show copies of camels for the children to draw, or cut around. Sheep and goats will be found in the Section on *A Year's Work*. Fig. 50 shows the picture of an Arab which the children can cut out. Fig. 51 shows the children's finished model.

They will be interested in learning how the Arabs dress (just as Abraham dressed in far-away Bible days) in the following simple garments—

1. A white gown or shirt with loose sleeves, fastened around the waist with a girdle of leather or wool.
2. A cloak, white or black (goat's hair), or striped.
3. A head-dress consisting of a handkerchief fastened round the head with a band of dark camel hair rope.

When the children know how the Arabs dress, they will enjoy dressing little dolls in tissue paper for their Arab encampment.

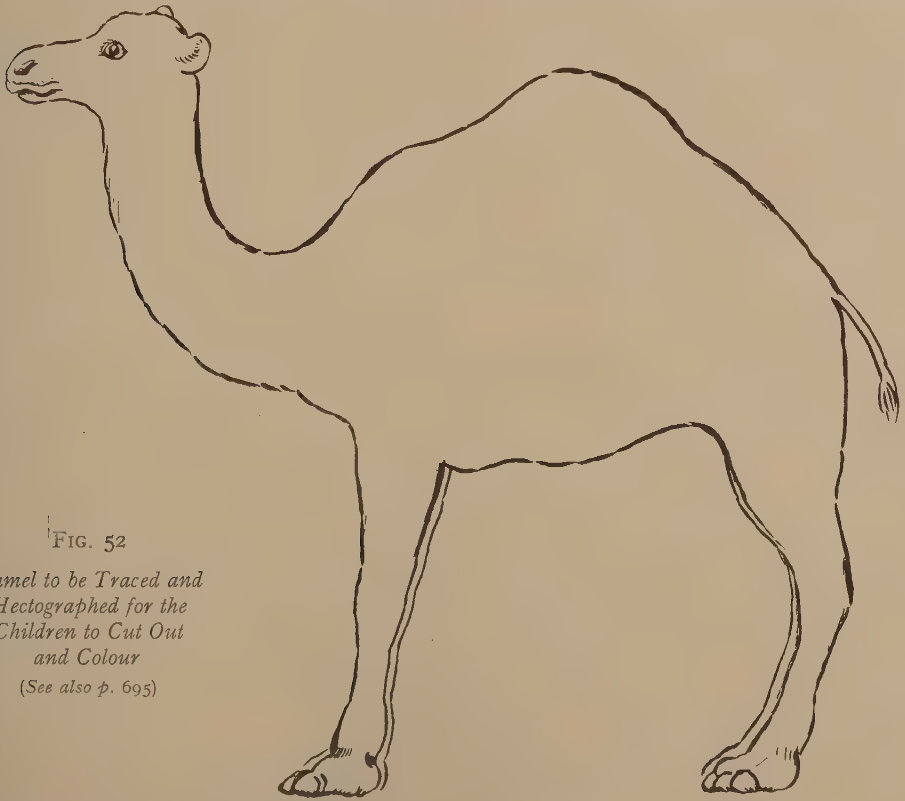


FIG. 52

Camel to be Traced and Hectographed for the Children to Cut Out and Colour

(*See also p.* 695)

(C) TROPICAL COUNTRY

THE tropical lands will be to the little child the *hot lands*, where the sun always shines very warm and bright, and the rains at regular seasons make the plants and trees and grass grow rapidly. The children will enjoy making a forest on the sand table. Fig. 54 shows a useful picture. It may be enlarged and coloured on a large sheet of cardboard to form a background to the children's scene (*see* slat model frame, page 338). A background can also be made very quickly by chalking in pastels, trees of all kinds, and creepers, on sheets of greenish grey paper. Bright red, or yellow, flowers can be chalked here and there on the creepers that wreath the trees from branch to branch.

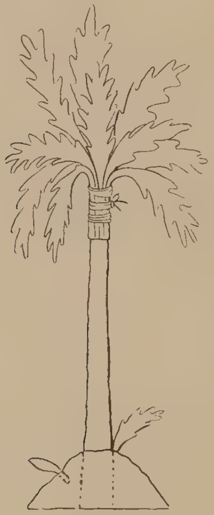


FIG. 53

Tree for a Tropical Forest

The leaves are cut from green paper and tied to the top of a stick

Green or brown plasticine supports the stick

The children can look at the leaves of the trees and grasses in the picture and think of any English trees or plants that are something like them; then they can draw and paint them, and cut them out, to stand on the sand table, or they can think of different ways of making trees from green paper, pieces of cane, and raffia, etc. Fig. 53 shows one way of making a tree with great leaves; the trunk is a piece of thick cane, or a twig stuck in some plasticine to support it.

In the forest may be a pond, or pool, for the animals to come and drink (as in Fig. 54).

The Animals of the Hot Lands

Little ones will enjoy colouring and cutting out pictures of animals to put in their forest, or trying to model them of clay or plasticine.

In the hot lands there will be great big animals that push their way through the thick forests like the elephant, animals that can climb from branch to branch of the trees like monkeys (Fig. 55). In the swamps and streams there are crocodiles and hippopotami (Figs. 55 and 56).

In some parts of the hot lands, where there is not quite so much rain, there are fewer trees, but the grass grows higher than our heads; here, on these grassy plains, are more elephants, the tall giraffe, the striped zebra, and the lion (Figs. 55 and 56).

Little ones can show on their sand table both the forest and the grass lands. The forest houses of the pygmies have already been described in *Children of Other Lands*, houses in the hot grass lands, page 698.

Native Huts in the Grass Lands of Africa

Figs. 57 and 58 show two kinds of houses in the grass lands of Africa that the children can build. Fig. 57 shows little Osom's house (*see* story on page 698). When the children hear how it is built, they can all try to build one for the sand table. In the grass lands the materials will naturally be grass (the grass is as tall as a man), leaves of palm-like tree, mud, and sticks. The walls are first made of poles stuck firmly in the ground, thin strips of cane or grass are woven in and out through them.

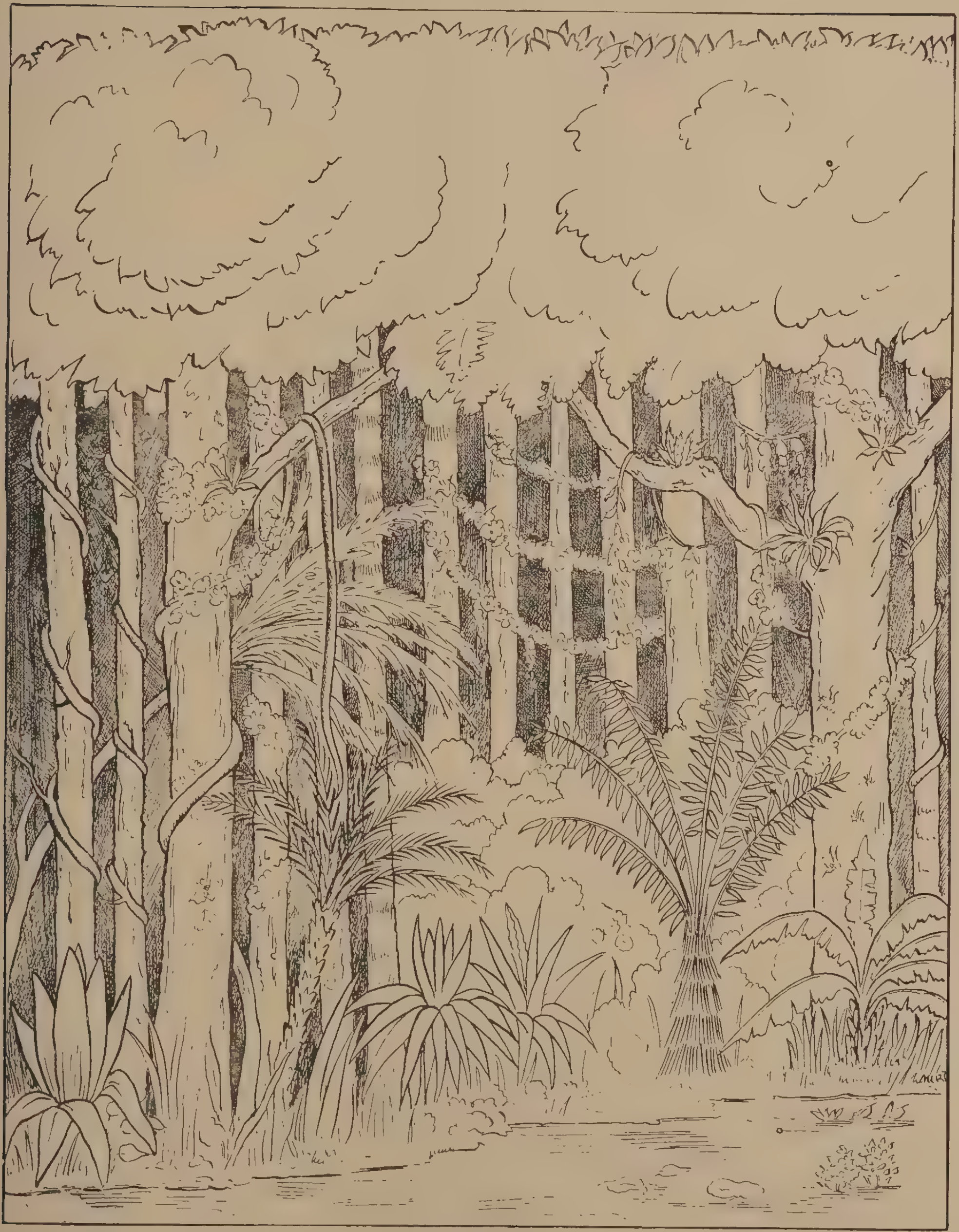


FIG. 54

Background for a Tropical Forest Scene

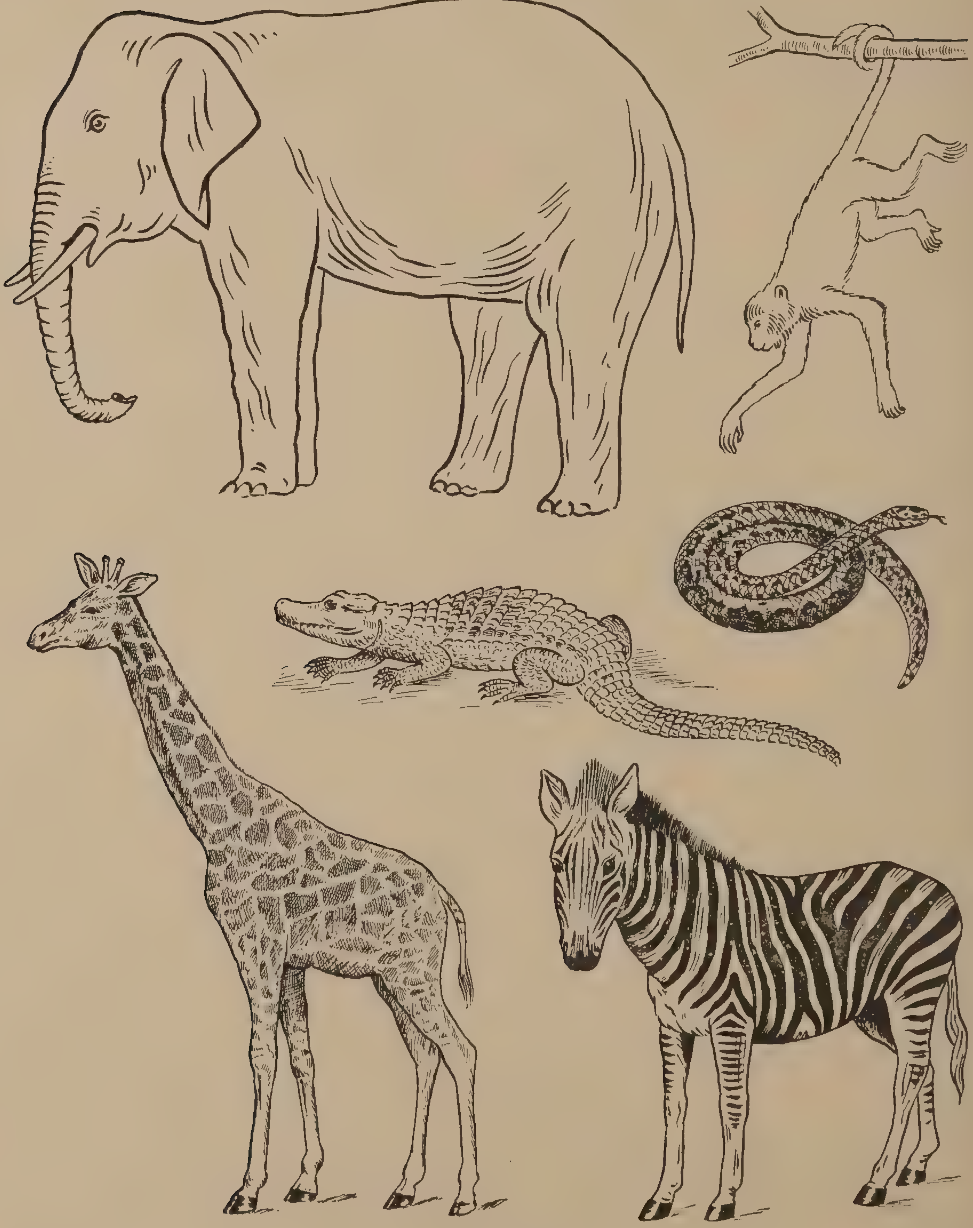


FIG. 55

Some Animals of the Hot Lands

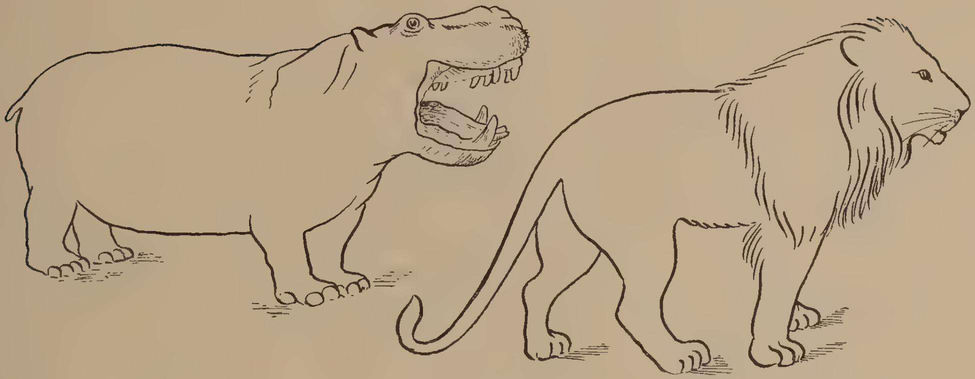


FIG. 56

Animals of the Hot Lands

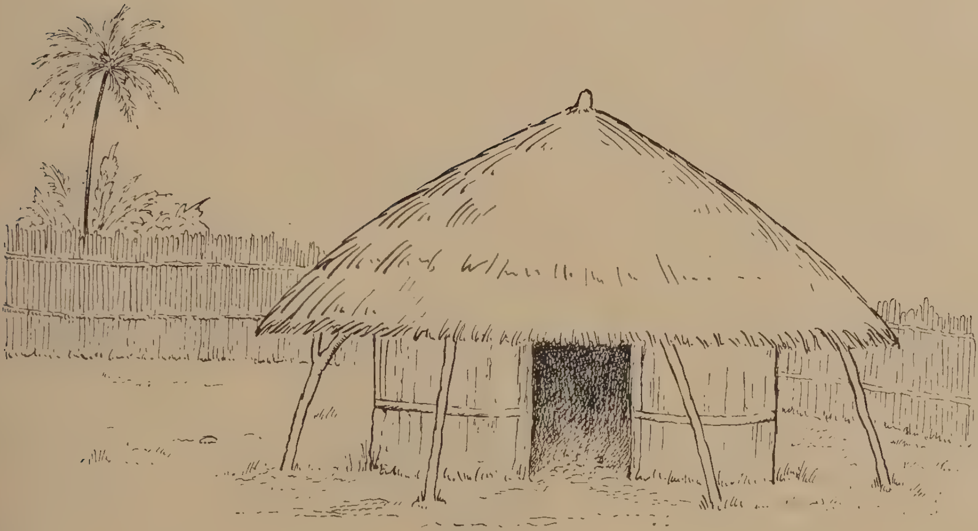


FIG. 57

Little Osom's House in the Hot Lands

This framework is plastered with mud. (The children can use clay or plasticine.) The floor is made of clay, pounded hard by the negroes.

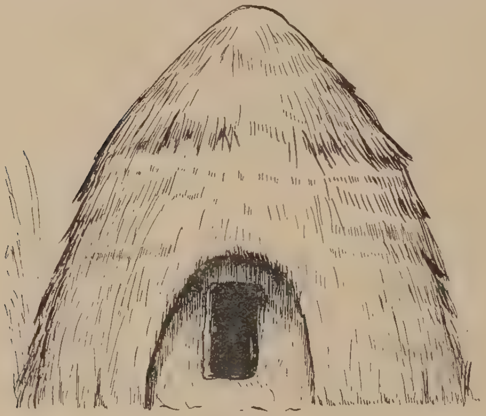


FIG. 58

A Negro's House of Grass and Bark in the Hot Lands

The roof is made of grass or leaves (long leaves) tied to poles, and so put together that it forms a tall pointed cap resting on the walls.

The roof comes out over the walls, shading the hut, and it is so thick that it keeps out the rain.

Making the Roof

The children can make the thatch by taking a bunch of raffia, cutting it the necessary length, tying it at one end and fixing it on the frame work of the roof, which is made of small sticks tied together at the top with their untied ends resting on the walls. Plenty of clay will make the walls strong enough to hold the roof. Several houses may be made, and a fence to encircle them.

However crude and imperfect the children's model may be, the teacher will have accomplished her purpose if she has led her little ones to think that there are lands far away where there is no winter, but always summer, with hot sunshine and rain, so that the ground and air are full of life—tall grass, tall trees, beautiful creepers, gay birds, butterflies, and insects of all kinds and strange big animals like the elephant. The making of this model will also be linked with the nature study lessons, where the value of sunshine and rain to all growing things has been stressed.

(D) SHORE-LAND

SOME suggestions for models of shore-lands have already been given, the sheltered bay, the cliffs, and the rocky shore.

But besides these, interesting models can also be built showing something of the occupations and kind of life of those who live near the sea.

1. There is the *pleasure beach*, the sandy shore with its bathing tents and promenade, its hotels and places of amusement. All little ones will enjoy building up this scene, it will be something like Fig. 66, but it will have the characteristics of the place the child knows best himself, or has heard most about.

2. *A Fishing Village*

Fig. 59 is a useful illustration. The hilly ground may be modelled of clay, the cottages of the fishermen made of paper. Boxes may be used to enclose a small harbour, and make a landing place for the fishing boats. The fishing boats may be made of paper, or drawn and coloured on paper and then cut out. Just how they are made will depend upon the age of the children. Many children may like to make the boats for their fishing fleet of clay; masts of cane, and sails of brown paper are then easily added.

Some children may like to show the quay only, with a line of warehouses at the back where the fish are salted, etc. A great deal will depend on the fishing town or village with which they are familiar. They will delight in making barrels and baskets and fish carts, etc., to go on the quay. Fish may be cut from grey paper. (*See also the story "Little Olaf, A Fisher Boy of Norway,"* on page 712.)

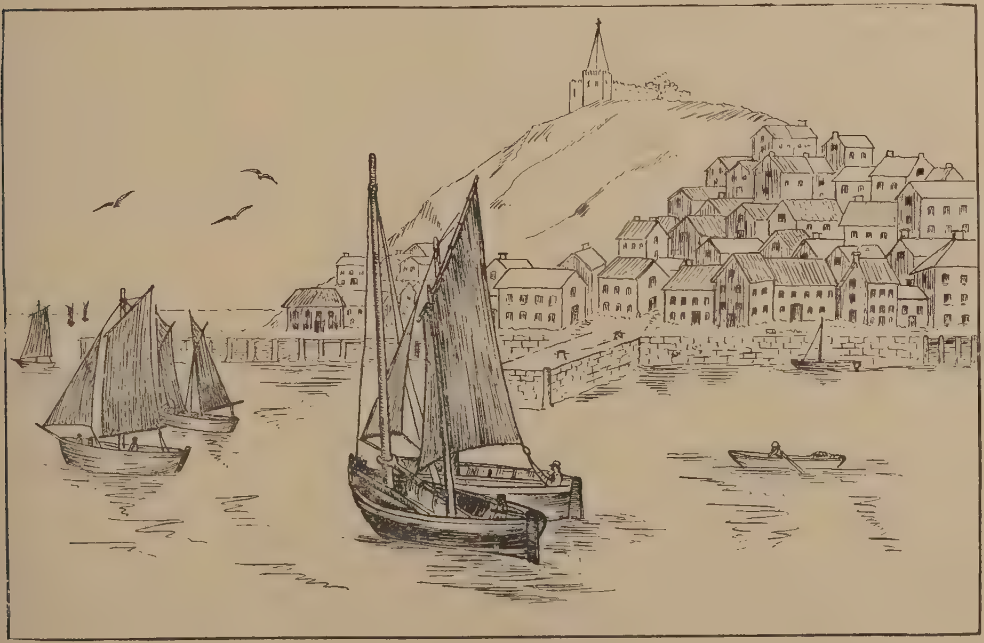


FIG. 59

A Fishing Village

3. *A Dock*

Fig. 60 shows a useful illustration. The dock may be built of boxes or large building bricks; match boxes are useful for trucks. The crane may be built of boxes, strips of wood, and reels. The little ones will especially enjoy making boxes, barrels, bales, sacks, and packages of all kinds, to stand on the quay and represent the goods that have been unloaded from, or are to be loaded on, the ships. If they have learnt how to write, they can print themselves the names of the goods to go on the packing cases. For example—cocoa, wheat, salmon, wool, dried fish, tea, etc.

The ships and tugs that come into the dock are best built of small bricks (the funnel may be a roll of paper, and the masts pieces of stout cane or stick). By building their merchant ships of bricks, the children can leave a deep hold for the goods. This model is a useful one to take in connection with *Journeys to Other Lands.*

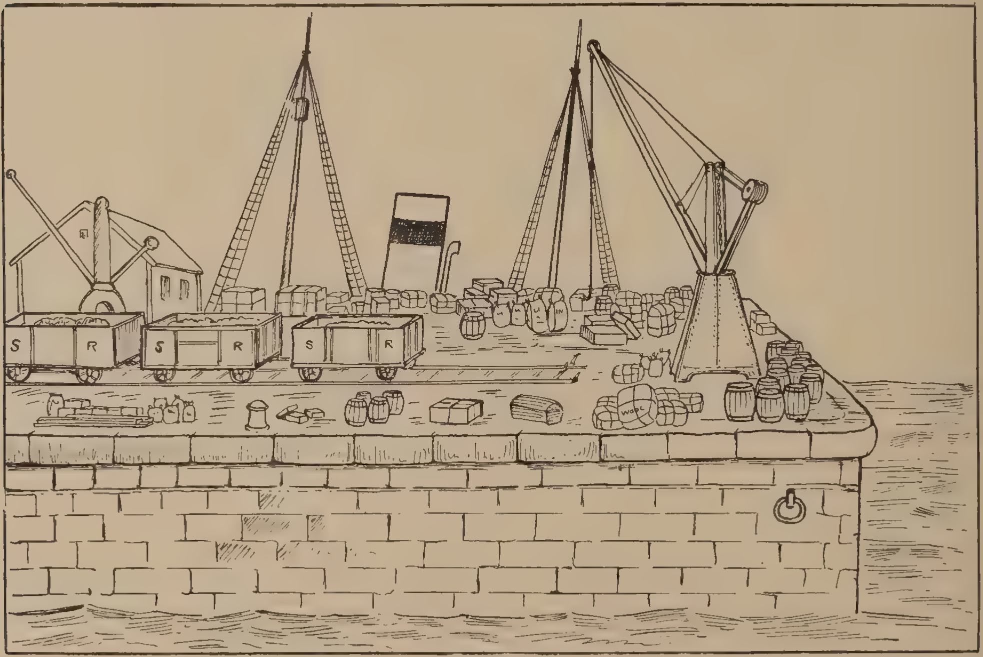


FIG. 60

A Dock

(E) INLAND SCENERY

SOME types of inland scenery have already been dealt with, for example, a river at its source, a lake, mountains and hills, manufacturing towns. (*See the Section on Town Life, and the Woollen Industry.*)

Just what inland scene the children represent will depend a great deal on their surroundings (*see Talks on Local Geography*) and on their age.

Directions for making villages with roads, cottages, etc., will be found in the Section on *Handwork.*

(F) PARKS

THE construction of a scene in a park is well within the powers of most little children. A park, too, is familiar to nearly all.

Let the children try to find a good position on the sand table for the main entrance. The paths leading from this should be planned out as carefully as possible. Familiar trees or seats will help them to visualize these paths. As they remember each detail, it can be roughly put in at first and then altered as the model grows.

Let children try to remember the *general shape* of each tree without details, so that they can cut each freely from green paper, a tall tree, a bush, a " fat " tree, etc. Sloping ground, or hills, should be carefully shown. Ponds, fountains, sundials, etc., may be modelled in clay or plasticine ; seats or shelters are best made of paper, or blocks.

People and animals are cut from paper or moulded in clay ; trees are represented by twigs as well as by paper. Plans should be simple, and made and carried out by the children. The teacher, by her questions, helps the children to think their plans out and to organize ; but the working out should be the result of their own initiative rather than of the dictation of the teacher.

Wind, Rain, Snow, Day and Night, etc.

These subjects will be dealt with at length in the *Nature Study Section.* But in their stories about Children of Other Lands, and in the construction of their land and sea models, park scenes, farms, etc., the following points will be emphasized again.

The Winds. How they help : turning windmills (Little Mina of Holland), blowing ships along (seaside scenes), drying clothes (home scenes), etc ; how they play : flying kites, blowing leaves about, blowing clouds across the sky, tossing things about. (*See the Drawing Vocabulary for a Windy Day, in the Section on The Teacher and her Work,* page 135.)

The Rains. A rainy day, with its interesting accompaniment of rubber boots, raincoat, and umbrella, always interests. Let children notice the work of the rain in forming little rivers in the street, carrying away soil, etc. (*See Section on Construction of Land and Sea Models—rivers, lakes, etc.*) Get the children to notice when the rains come ; the changes following winter and spring rains, river beds fill with water, fields turn green, trees bud and blossom. Connect rain with the growing season. (*See Blasiyo's Life in the Hot Wet Forest, Children of Other Lands,* page 696.) Rainbows and sunshine.

The Sun

In the early spring, the effect of sunshine on seeds and bulbs planted in the window boxes will have been noted. Excursions will be planned in order that the children may discover signs of new life, as they appear in the grass, leaf buds, and early wild flowers. Emphasize the value of sunshine to all growing things. (The children will understand better how the hot sunshine makes the plants and trees grow in Osom's land, page 698, and the land of the little brown boy. These countries have much more sunshine than ours.)

Paper hats or sunbonnets can be made by the children to protect them from the sun in summer. Let them notice the greater warmth about noon time, the sun is nearly overhead. Connect sunrise with morning and the east ; sunset with evening and the west. Moon and stars with night. Let them notice the months of autumn, winter, and spring, especially in connection with their study of farm life.

The Sea. Tides and waves—sea life and beach life. *See* story of " Little Olaf of Norway," page 712, also models suggested on page 748 (Figs. 66 and 67).

CONSTRUCTION OF LAND AND SEA MODELS

INTRODUCTION to hills, mountains, rivers, lakes, and other geographical phenomena may begin at the age of four (if the child is ripe for it), with the construction of models in sand, cardboard, plasticine, clay, chalks, etc.

Useful elementary geography can be taught at a large sand-tray, or in a part of the garden reserved for the teaching of geography.

Through modelling in clay and sand, and by the use of pictures, children begin to " think in shapes," which is said to be the essence of all geographical thought. Figs. 61, 62, 63, 64, show useful illustrations of some of the different forms of land and water. These forms should first be modelled in sand, or clay, or plasticine (and coloured, if clay is used), and then the pictures can be shown. Little ones will enjoy chalking or painting these pictures, which can be easily traced and hectographed for them.

As far as possible, the first land and water shapes studied should be those seen in the neighbourhood of the child.

Places the Child has Seen

Although these models in sand or clay are likely to give the children incorrect ideas of size (a danger that has already been pointed out in the use of pictures), this danger is to some extent avoided, if the children model familiar sights in their neighbourhood, just as they first study pictures of familiar things.

The sand is easily shaped into hills, or hills with a valley between as in Fig. 61.

The lake (Fig. 62) can be made in the following way—the children place a piece of glass, or a piece of blue paper at the bottom of the sand table. This must be perfectly level. Then around the lake the children will build a hilly country of sand or clay. As they build, this fact must be kept in mind—the surface of the lake is level, but the hills, some steep, others gently sloping, are very irregular.

The children will all be familiar with a pond—a very small lake—and from this they will build up their idea of a big lake.

Ponds can also be made by the children by burying pails in the sand, or earth, out of doors, and filling them with water. Children will enjoy floating things on their little ponds. Ponds can also be made by burying saucers on the sand table (red earthenware saucers are best), in the same way.

Fig. 63 shows a simple picture of an island that the children can colour when they have made their model.

How Rivers are Made

Children should be encouraged to notice the little rivers formed by the rain on a wet day. One little stream, perhaps hardly an inch wide, begins at one point; another joins it, then another, and quite a large stream is formed.

Let the children notice the water is muddy. This means that soil has become mixed with the water and is being carried away. Point out to the children the little channels, or *valleys*, and tiny *hills* and *ridges* carved in the soil.

If the children cannot be shown these things on a wet day, they can easily make them one fine day by pouring water from a sprinkler upon a pile of loose earth.

Ideas on the work of a *river* in shaping the land, and some of the main features of its course through mountain, valley, and plain, may also be gathered on a large sand tray, with a hole for drainage, as well as in the garden. The children, as they model the course of the river, will notice how it begins near the hills, increases in size as it goes along, and winds along the flat land to end in the sea.

Bridges and boats can be made for the river. Different ways of crossing a river can be discussed. Fig. 64 shows a picture of a river for

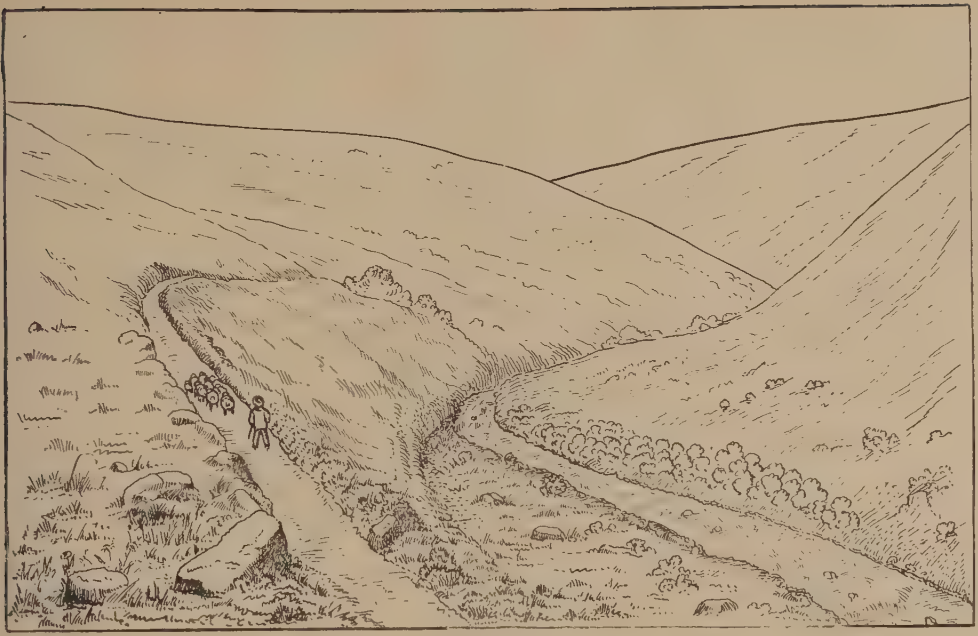


FIG. 61

A Valley (to be coloured)

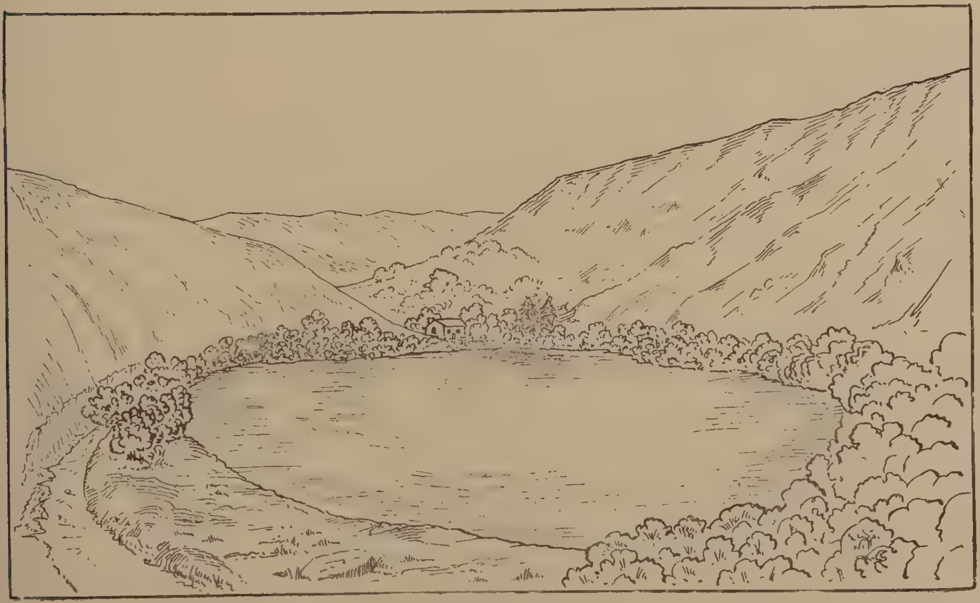


FIG. 62

Simple Lake Scene for Colouring

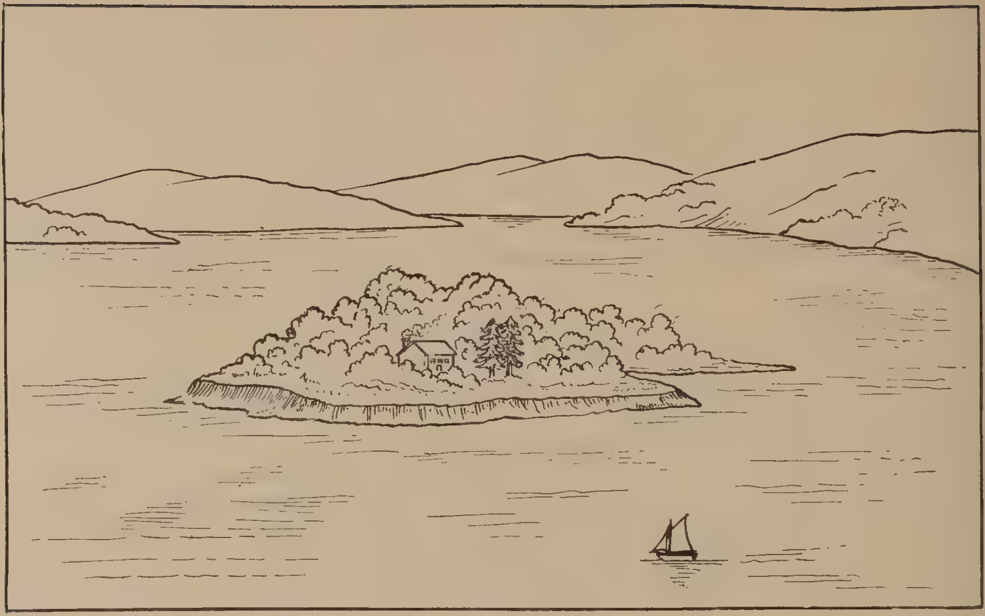


FIG. 63

An Island

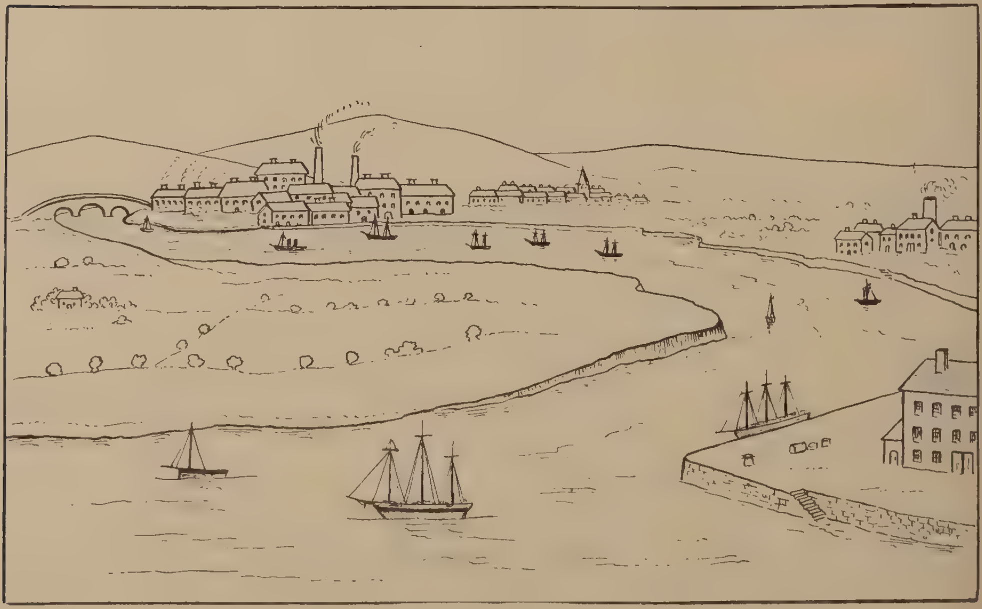


FIG. 64

A River, Showing how it Broadens Towards the Mouth

(Children to colour this scene)

little ones to chalk. It shows the river widening out to the sea.

Other pictures of different scenes on a river can be shown the children when they have tried to model them.

Where the River Begins

It may be possible for them to make a scene in the garden, or on the sand table, or some convenient place, to show the beginnings or source of a river. First the children must model a mountain side; bubbling out of the ground, and trickling down the mountain side comes a little stream. Another little stream joins it from the mountain, and then another, so that it becomes larger and gradually broadens into a river.

As it may be impossible to use water in this model, the mountain side can be built of clay. When the clay is dry, the little stream that comes bubbling out of the mountain side is painted blue, and the other little streams that join it. A few stones or pretty pebbles from the garden will improve the mountain, a few can be placed near the spring where the little river begins. Parts of the mountain may be painted brown and green. The broader stream, at the foot of the mountain, may be represented by a piece of blue paper with clay and pebbles for the banks.

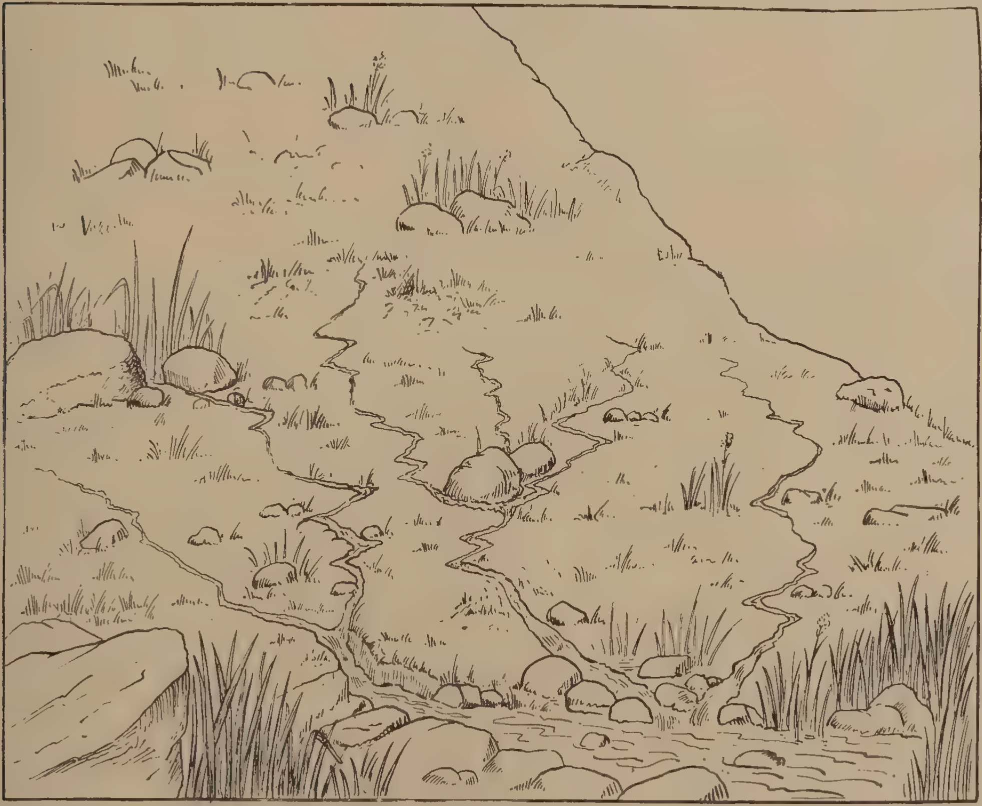


FIG. 65

The Source, or Beginning, of a River

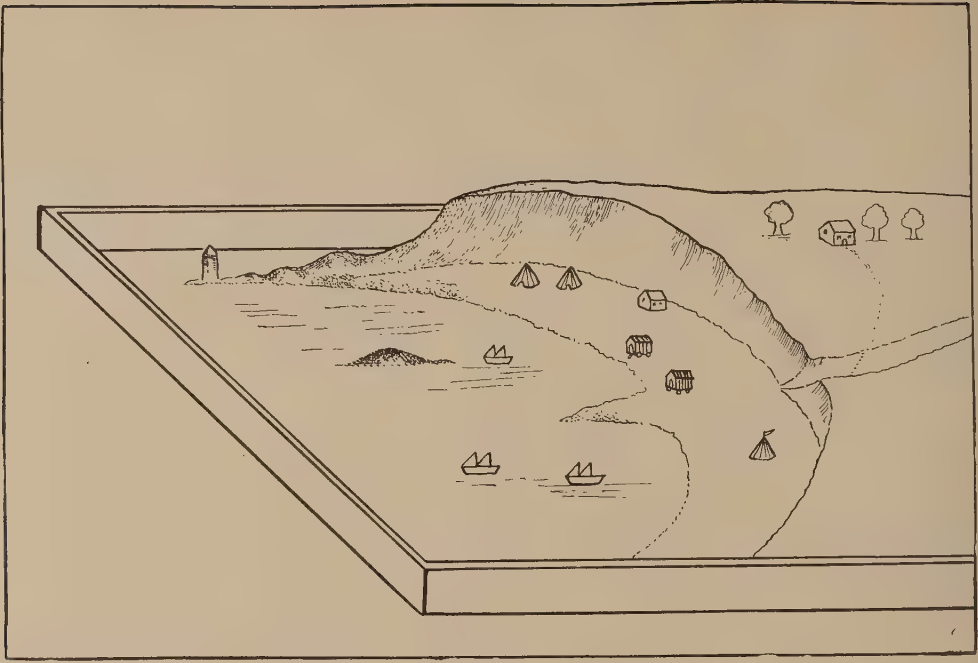


FIG. 66

A Bay, Modelled on the Sand Table

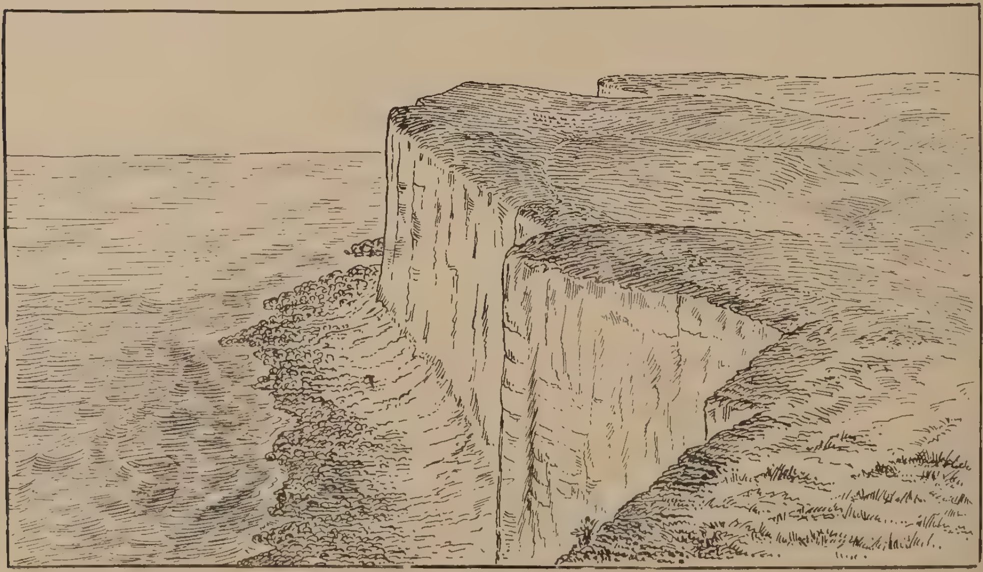


FIG. 67

Cliffs and Sea

To show the ground is wet and marshy near the source of the river, rushes and reeds may be cut from green paper to stand along the banks.

Fig. 65 shows a picture of the source of a river. The colouring of the little streams in this picture will help to make it clearer.

Some Sea Models

Fig. 66 shows a sketch of the children's model of a bay built up on the sand table. It shows cliffs (built up of clay), beach (sand or very small pebbles from the garden), sea (blue paper or blue plasticine), lighthouse (built of clay), islands (clay), etc.

Fig. 67 shows a picture of some cliffs for little ones to colour. They can model these cliffs on the sand table.

All the early efforts in the construction of land and sea models should be made as far as possible with sand (damp sand models well), which is so easy for little fingers to handle. But later on, the sand will give place to plasticine or clay or paper pulp.

Paper pulp is made by tearing paper into tiny pieces, soaking it for about twelve hours, draining off superfluous water, beating it to a pulp, and then adding a little adhesive material like size, or whitening, or starch, and mixing it to a convenient consistency.

In connection with the above work, one must again repeat this warning that it is necessary to avoid with the younger children any attempt at teaching them to construct in plasticine or clay those geographical phenomena that are too remote from their experience and social life.

If there is a river in their neighbourhood, then the work suggested in connection with the river is not too difficult, but for some little ones it may well be too big a problem.

Summary of Constructive Work

Below is a brief summary of some constructive work, all well within the range of the little one of six or seven.

1. Modelling in clay, or plasticine, or other materials any parks, or gardens, or places of interest in the neighbourhood. On page 743 detailed advice is given on how to represent a park.

2. Representing, in the various media suggested, the simpler forms of land and water, especially those that are connected, as far as possible, with the child's environment—e.g. lakes (or ponds), islands, etc. Little ones will enjoy, in particular, making a waterfall of clay and stones in the garden, or on the sand table. When they have built up a sloping mountain, they can have the joy of seeing real water flow down it.

3. Some of their geographical models will be built up in connection with their stories, such as the forest of the three bears, the bridge the Billy Goats Gruff crossed (page 169) to get to the *mountain*, where the grass grew to make them fat; Robinson Crusoe's island, etc., etc.

4. Seaside scenes, a bay, a harbour, as in Fig. 59. *(See also Section on the Construction of Various Types of Country.)*

NATURE STUDY

HOW THE CHILD MAY STUDY NATURE

THE study of Nature should be considered as a *quest*, the purpose of which is to gain an insight into the ways plants and animals really live, their dependence on one another, and their relation to the life of man. Hence, ideally, it is the study of natural things *as they are in the open air*.

Town teachers will say, " Then for us it is an impossibility, for where can our children see growing things in the open air ? " Town and Nature are admittedly in sharpest contrast, yet because no study can be of such importance in the life of a child as this to which Nature herself calls him through the channels of instinct, ways and means must be discovered of giving each one as far as possible that which is his right —association with living things.

Not Lessons

The old idea that Nature Study means lessons on plants and animals still survives, and it is one of the chief reasons why so many teachers prefer to take anything rather than " Nature lessons." Unless it is spontaneous, the counting of petals and sepals on a particular flower, or the description of feathers on a bird's wing, the effort to remember whether there are four—or is it five ?—toes on a frog's front leg, are equally boring to teacher and children. Why are such facts so difficult to remember ?

Is it not that we have a strong feeling that they really do not matter ? We can enjoy a primrose just as much if we have never examined and counted its details in school ; perhaps more so. Nature Study is not investigation of the anatomy of living things, but of their biography.

Why is it that we are so thrilled when a farmer or shepherd tells us of the doings "of that cunning old fox," or that the "starlings are flocking early this year," or that "the heather is out on the hills"; or when the fishermen, rowing us, looks intently at the movements of some seagulls, and on being questioned, merely says "it's the herrings," as though we understood the whole inwardness of the remark. It is indeed the *inwardness* of facts to which we respond.

When farmer, shepherd, gardener, fisherman tell us of the things of Nature, we listen because we feel that they are talking of the things they have seen, and know to be of interest, and that they have faced the tremendous importance to man's life of knowing how to deal with certain facts of Nature.

The Child Wants to See

Can we learn the secrets of a rabbit's life in a half-hour schoolroom lesson? To gain even a bit of this knowledge means patient watching, continued for the best part of a year. Can the most vivid description, illustrated with coloured pictures that tell what someone else has seen, equal in value a quarter of an hour spent by a child, hidden under a clump of bracken, actually watching a mother rabbit with her family? In a certain school a rabbit lesson was in progress when a child announced he "had see'd a rabbit tear across a field," the immediate eager interest and questions showed the response to first-hand observation.

Unless children grow plants, does it really matter to them when they are told that aphides, froghoppers and caterpillars suck the juices, and devour the leaves? But when a child himself owns a plant, it becomes a matter of great importance to know how to deal with such enemies.

Having grasped the central fact about Nature Study—that it is to deal with *living things in the open air*, we can proceed to discuss what part the school should play in promoting this study.

Opportunities for Nature Observation

First must come a survey of the Nature conditions of the particular school. Country schools have no difficulty in providing out-of-door work, since one type of country at least will be available; hence we shall particularly concentrate on the possibilities afforded by towns. In the face of great limitations, it is consoling to remember that even a very little first-hand observation is better than a multitude of "lessons," for this is remembered when the other is forgotten.

The town teacher should draw out for her own guidance a large plan of the Nature "possibilities" round about her school, such as a park, a stretch of canal or river, trees planted in streets, any houses with a strip of "garden," a privet hedge, buildings with ledges where pigeons or sparrows build; projecting ledges on low walls separating houses from pavements, under which children can look for pupae, spiders, moths, etc.; how many of the children have a back yard or garden; what they grow in these; how many of their parents grow plants indoors, and if so, what kind; how many have cats, birds, dogs, mice or any other animals living in their homes; streets, where coster barrows and fish, flower, and vegetable shops may be found.

A great many town schools have most of these "possibilities," and all have some. There are always flies, spiders, possibly beetles, daddy long-legs, gnats, as well as other insects in homes at different times of the year. Then inquiries might be made as to whether any children are taken by their parents into the country for a day; whether any spend holidays at the seaside, or in the country; and whether any go with their parents pea picking, "hopping," or fruit picking.

Reference to streets where the children live and to this plan, will soon show the teacher what kinds of quests she can suggest to the little ones.

Nature Observation in the Class Room

Probably the next consideration will be how the school can supplement the experiences afforded by the neighbourhood. If there is no space for gardening, boxes should be prepared (see page 815); in spring, nesting-boxes can be hung up on walls, out of reach of cats; and for winter study, a bird table (*see Section on Birds*) would probably be a centre of attraction. An aquarium (page 129) and vivarium must be considered; also what is possible in the way of growing plants in school.

It is obvious that only a very general scheme of work can be drawn up; so much will depend on weather, on the discoveries, and reports children bring in from their excursions. Yet some definite scheme for the whole school is necessary to prevent overlapping.

Helping the Child to See

It is of little use advising children to visit a park, or even to look at a certain tree and tell something of what they see; this is too vague, and is a waste of time. Children will notice very little; the teacher must be prepared with suggestions of a definite and interesting nature, and children will welcome something to do in the long hours out of school, when many are turned out into the streets.

The most important Nature work out of school will be done by the children, whose journeys of discovery—even though they be only to ivy or creeper in back yards, to see what creatures are hibernating under the leaves—should be directed, or suggested, by the teacher, largely in the time allotted to Nature study in school. She would then also hear reports, talk over experiences, enrich these with stories, interesting anecdotes, poems, or, with the help of good pictures and blackboard illustrations, would relate such experiences to animal and plant life outside the town, or to countries far away. For instance, cat observations could be used to interpret stories about lions, panthers, and tigers.

A Nature expedition to a park, the Zoo, or even a rarer country outing with the teacher, would be used to fill in gaps, and supplement the work done by individual children.

Keeping to a Set Scheme

Suppose part of the year's work is a study of birds; there will be the preparation of the bird table, the suggestion that each child could turn a window sill at home into a "table," with crumbs and perhaps a bone. This will greatly increase opportunities of closer watching of birds, and for endeavouring to make friends with some of these wild creatures.

For Saturdays, and evening walks, the teacher will be full of interesting suggestions of things to do, such as—try to watch a bird bathing, then see if you can find any other ways birds have of keeping their feathers clean; get as near to any bird as you can, and try to see its colours. Have, on the schoolroom walls, coloured pictures of birds likely to be seen in the district, and let children try to identify any they have specially noticed. They will gradually come to realize that they learn most when they go alone or in the company of one friend.

Take a pencil and paper and draw the footmarks left by a bird in a muddy place, then look for different marks (this would naturally lead to a talk on feet and claws). There might be a quest for old nests in the district, each one discovered to be marked on Nest Chart (*see Section on Birds*). Also, let the children watch the beginning of building, when the teacher might have a few specimens of old nests for detailed inspection, so that children may better understand what the birds are doing.

Child's Record of Investigation

In connection with this investigation work, children might prepare a bird book, wherein to record their own drawings of birds, nests, feathers, eggs, any collected pictures, anecdotes, stories, or poems. Nature textbooks should be available for the use of teachers and children; if a child thinks he has discovered a certain bird, he will be interested in looking it up in the book, and teachers will be glad of any help to supplement their own knowledge in framing directive suggestions. Although this observational work out-of-doors is the most important type of Nature study, it is only a part of what can be done in school to further this interest.

Nature Table and Rock Garden

It is desirable that town children should realize something of the seasonal changes; hence part of the equipment of the classroom should be a Nature table (*see* page 129), well supplied with vases and jars of all sizes, for the display of developing buds, wild flowers, collections of fruits on their stems, frog spawn, caddis larvae, silkworms, etc. Some plant as daisy, crocus, geranium, should be grown, that it may be closely watched from its planting to the time it sets its seed.

A garden that never fails to please is a miniature rock garden, and it can be so easily made, at almost any time of the year, though it is most useful in winter and earliest spring, when less Nature material is available, and when the weather is too inclement for much out-door work.

Any large shallow box can be utilized. Bore a few holes at the bottom, and put in a very uneven layer of earth. Insert a few stones for rocks. Damp this, and plant in it tiny tufts of moss, little rosettes of saxifrages and sedums, a few pieces of lichen, red cups and fairy cups, seedling pines, and heaths. A Saturday excursion to some hilly district should provide a teacher with ample material, and the result will be a never-failing source of interest to the children.

Pictures and Illustrations

There are certain pictures that every town school should possess, and they should be large and well-coloured—a wood, a common, a cornfield, meadow, a bit of sea coast form useful backgrounds, when telling stories of the way any particular creature lives, and of the country it haunts. Best of all are those provided by a magic lantern; and though there are excellent cinematograph films depicting animal and plant life, for young children, the lantern is better because there is less movement, and they can dwell on details for as long as they like.

Child's Nature Library

Much may be done to familiarize children with the appearance of plants and animals, and with some details of their life-story, by starting a Nature library. A series of small post card albums containing some of the excellent sets of birds, fish, insects, flowers, and foreign animals are always in use in those schools where teachers are adopting this plan.

Many children enjoy books of reference if they are illustrated; hence a simple flora, a book of birds, butterflies and common insects should be available. To these should be added illustrated bulb and seed catalogues, for use in garden work. Books that sentimentalize too much over animal and plant life, also those that impute to animals human ideas, feelings and modes of thought should be avoided. They are apt to repel many children, and the true story of any living thing is abundantly satisfying in interest.

Since children learn more through their own activity than by listening, all Nature study should be accompanied by plenty of work. For younger children there are models of hutches, windmills, stables, farms to make; seeds and shells to sort or thread, to use for simple design, or to use as "play material." Grown up people forget botanical facts, but no one forgets daisy chains, cowslip balls, daisy "grannies," poppy dolls with monkshood and bluebell bonnets, acorn teacups, potato pigs, raisin tortoises, or peapod and walnut-shell boats.

Making "Collections"

For older children there are match-box cabinets to hold small objects; nesting-boxes; fishing nets for pond dipping excursions; "developing cages" for caterpillars; collections of seeds, shells, leaves, seaweeds, flowers, to last only for a season, because the joy of a collection is not in possession but in collecting. There are charts and all manner of Nature records to make, pictures to paint, measurements of growth to take, Nature material to be collected and used, so that cones, grasses, twigs, large seeds and shells may be fashioned into baskets, bags, boxes, whistles, necklets, etc.

So long as there is plenty to do, children work hard and are happy, and work undertaken in this joyous spirit leaves a permanent interest—something to carry with them through life.

WEATHER CHARTS AND NATURE RECORDS

EVEN little children, when they first come to school, are interested in the weather as far as it affects their own activities. Thus, a child with a new umbrella hopes it will rain, and looks expectantly at the clouds; the sun melting the bar of chocolate brought for lunch becomes an object of interest, and the making of little toy windmills, and the sailing of boats in a large shallow bath, cause a good deal of experiment as to the direction of wind. Hence, through making use of daily experiences, and the interest in toys, children can be helped to form a habit of noticing the most obvious changes in weather.

How Weather Affects Plant and Animal Life

These changes have an important influence on plant and animal life, as well as on ourselves. Very gradually, through school life, the child can be led to appreciate the effect of warmth and moisture, warmth and dryness, cold and damp, cold and drought, on plant life; and if he owns a small garden, or shares in the school plot, it is not very long before he realizes, in a practical way, the importance of weather conditions to growth.

He learns in dry weather that his seeds will not germinate; or if seedlings are up, that they will not grow; he sees the almost miraculous growth after rainfall, following a spell of drought; he finds that in winter plants go through a variety of changes to adapt themselves to cold and frost; he notices that aphides and caterpillars attack his plants in summer, but cause him no anxiety in winter. Even on his own life weather has a marked influence, for he wears different clothes, eats different foods, and plays different games in summer and in winter.

Beginning of Weather Study

The youngest children are scarcely ready for anything in the nature of a weather chart, yet a beginning of weather study can be made during the early morning chat, or in connection with the inspection and care of their plants and animals. The teacher might cut out, and mount on cardboard, a series of children dressed appropriately for a sunny, cloudy, rainy, or snowy day; these could be kept in a box, and each day the one selected should be fitted into a grooved wooden stand and placed in a special part of the room. (*See* Fig. I.)

Susy Sunshine has a yellow frock, and is not wrapped up, Charlie Cloud carries an umbrella, Rose Rain has a mackintosh and rubbers, while Sam Snow wears a white overcoat and cap. For fog, a small piece of grey gauze or chiffon might envelope Charlie Cloud.

One of the fascinating little houses, so arranged that in fine weather a dainty lady appears, but when it is wet a man comes to the door, might stand on a shelf " to tell the weather."

A Simple Picture Chart

A step onwards would be the simple chart for recording a week's weather. Each morning, soon after arrival, a child should be chosen to paste on the symbol selected by all as appropriate, e.g. a coloured parasol for sunshine, an open umbrella for rain, a closed umbrella for cloud. In the place of umbrellas, gummed circles, kites, balloons, or any other objects coloured appropriately, could be used. (Fig. 3).

Some child may note that it is raining one afternoon, when the chart shows sunshine recorded in the morning, and this may lead to the decision that the weather must be " pasted up " afternoon, as well as morning.

Monthly Charts

Children of six or six-and-a-half years can learn to keep a weather chart for a month. This should be pinned on a board and hung within easy reach for recording by the children. Some

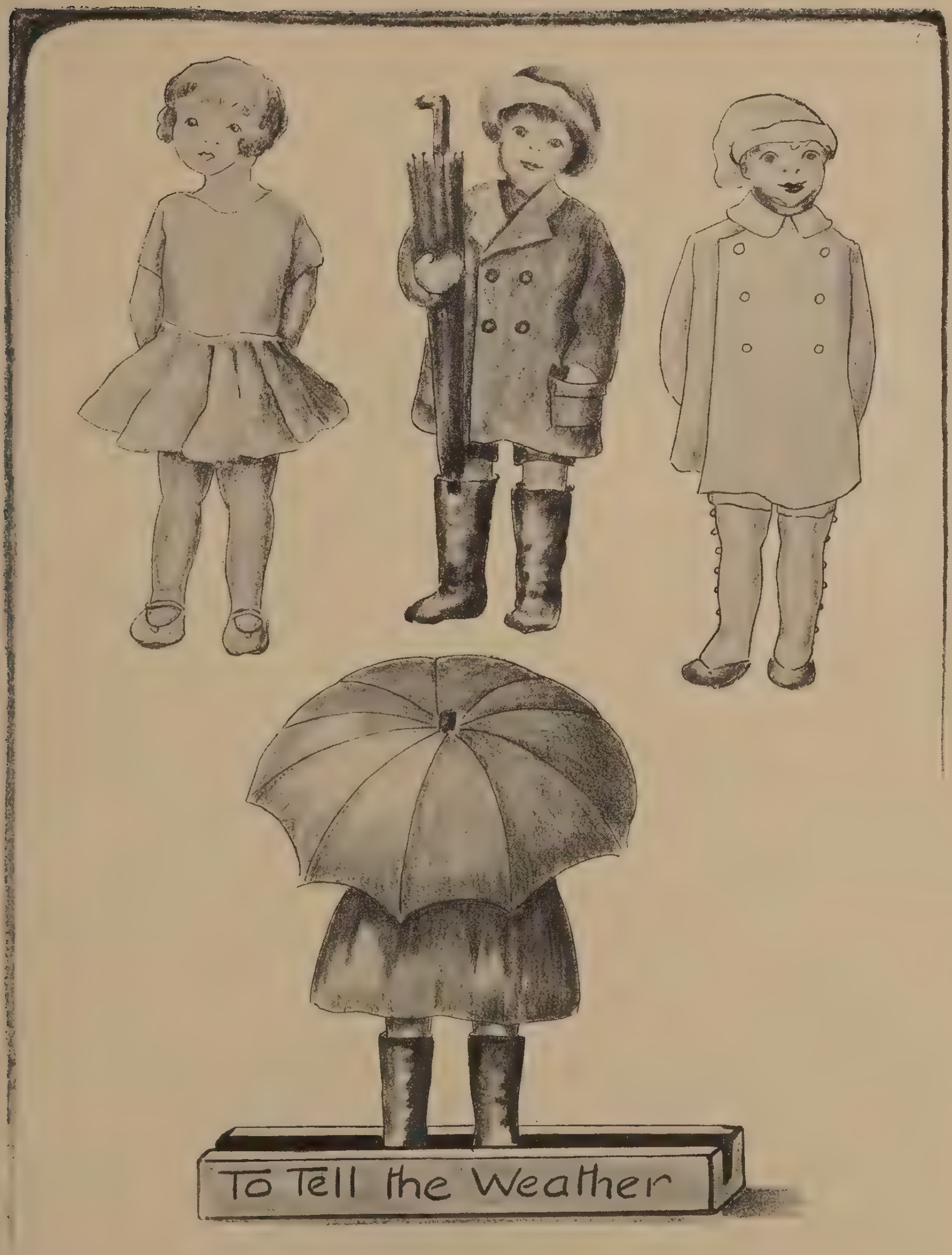

To Tell the Weather

FIG. 1

Weather Indicator for the Tiniest Ones of the simplest forms of month calendars are as shown in Figs. 4 and 6.

Fig. 4 is the simplest chart, recording only the days when the children are at school. Gummed circles are used to indicate weather each morning, and if there is a change in the day, a part of a circle is cut off and added; thus, it was sunny on Monday morning, but changed to rain in the afternoon.

It may be remarked that since Sunday and Saturday are left out, the chart does not show a true account of the month's weather; in this case two additional columns may be added, to be filled in on Monday morning. But it is not easy for children to think back for two days, and there are almost certain to be differences of opinion.

Fig. 6 shows a circular form of chart. The large circle is divided into four by concentric circles. In the centre is the name of the month; the next space is for dates; in the outer, the weather discs are pasted; and the large third space may be used for drawing natural things the children have "noticed," e.g. the first snowdrop, rooks beginning to build, that a tame robin pecked John's bread and butter.

Nature's Barometers

If possible, seaweed should be hung up, so that the children can tell "if it is going to be wet or fine"; also they might make for themselves little natural "barometers" from animated oats.

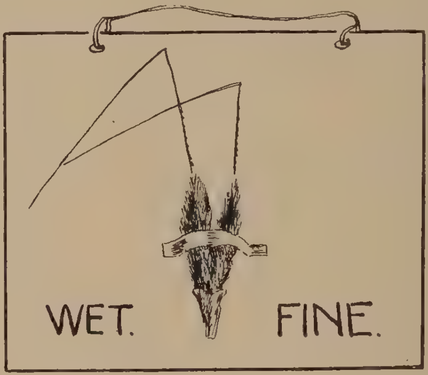


FIG. 2

An Oat Seed Barometer

These are oats having particularly long awns,

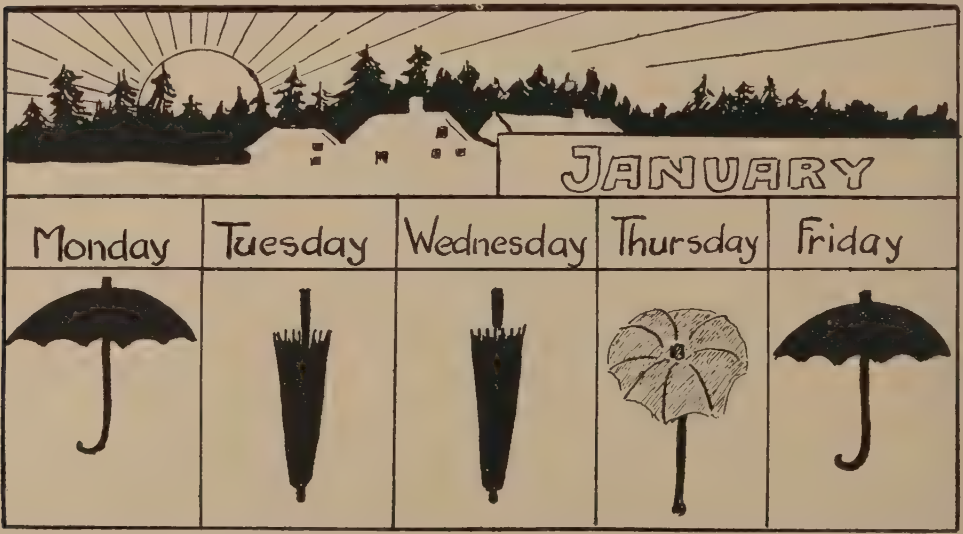


FIG. 3

A Weather Chart for One Week

with a spiral twist, and are readily acted upon by weather. On wet days the thread slowly untwists, and the awns move one way, looking like antennae of insects; on fine days they become dry, and in the process reverse movements.

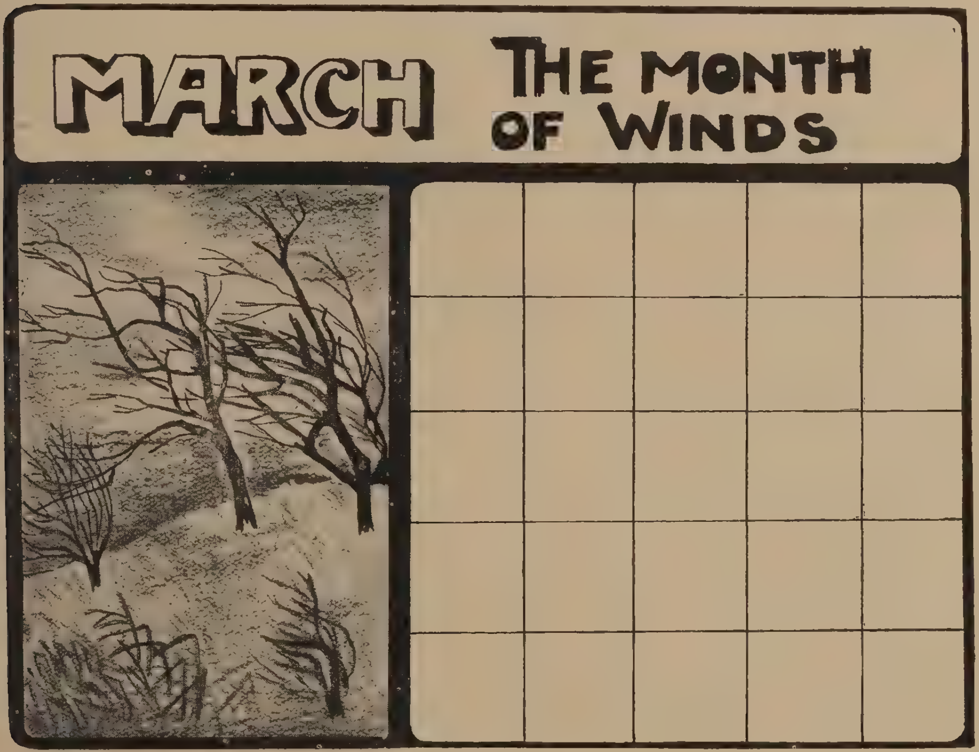


FIG. 4

Fig. 2 shows the oat seed fastened by a gummed strip to the centre of a small card, and after observing which way the awns move, the words WET and FINE should be printed. Children can take these to hang up at home, where, as a rule, they interest their parents as much as themselves.

Wind Charts

As soon as they learn about winds, weathercocks, and compass (*see Earth and Sky Study*), the direction of the wind should be noted.

Fig. 7 shows a chart for use in the room of the older children, where each day the square is chalked in, to show weather through colour, and the direction of the wind is indicated by an arrow. At the end of the month a summary of the weather can be made.

It is, of course, only approximate, but if such charts are kept throughout a year, they will be sufficient to show that with N., N.E., E. and S.E. winds, fine weather on the whole may be expected; and that W., S.W., S., and N.W. winds are often accompanied by rain and cloudy weather.

Weather and Nature Calendar

Fig. 6 gives a combined weather chart and nature calendar, which is to be drawn on a very large sheet of paper. The space is left for the recording of seasonal observations on plants and animals. Any child bringing an item of interest has the privilege of drawing, or "making a note of it," finishing the little business by signing his initials and the date.

If these sheets are kept for two or three years, children can compare notes of "finds" with those made by their schoolmates who have passed on, and such comparisons are useful in emphasizing the fact that Nature works to law, e.g. swallows may be looked for about 14th April in this district, or that the early snowdrops come out about the second week in February.

During winter months, when it gets dark early, perhaps for a few weeks the moon's changes may be followed, and drawn on the calendar, but this work is impossible in the summer time, owing to the lateness of rising.

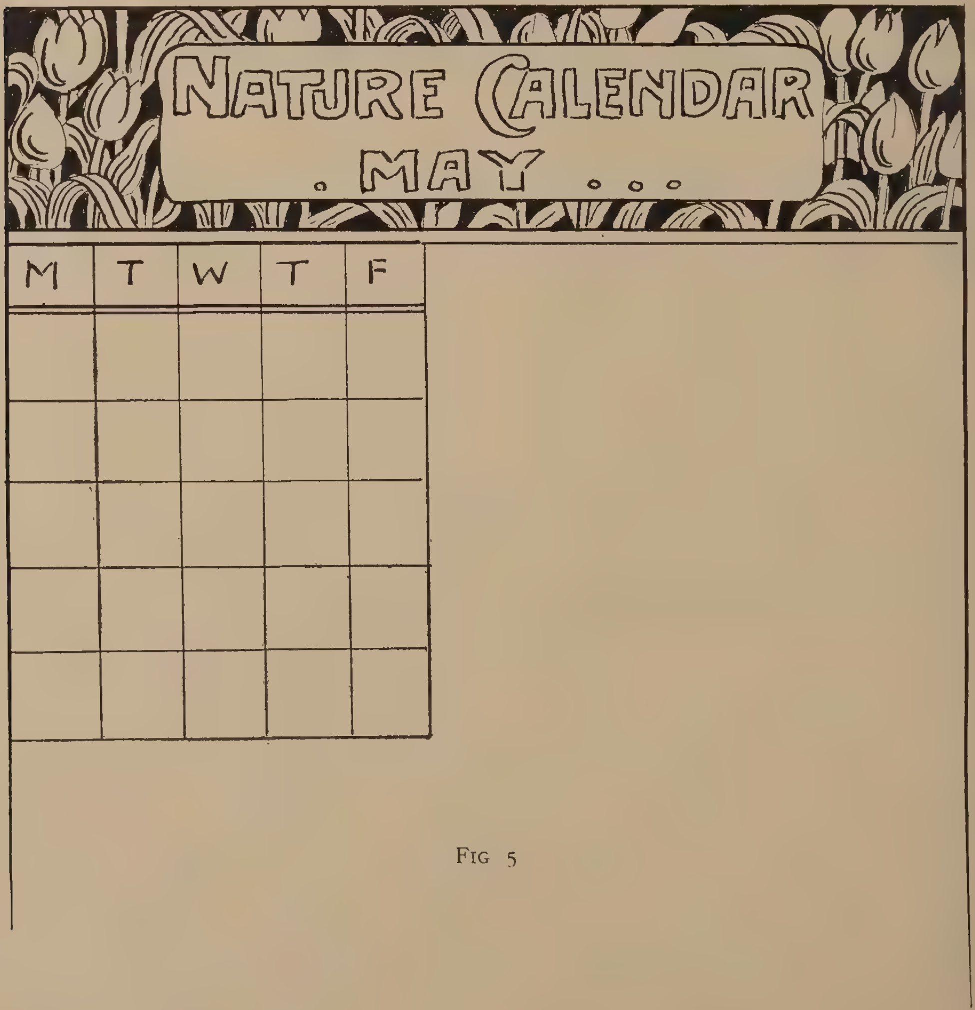


FIG 5

Nature Note-Books

As soon as possible, those children who are sufficiently interested, should be encouraged to keep private nature notebooks, and as example of school-mates is contagious, the great majority soon start this work which will, however, need steady encouragement and help from the teacher in forming the habit of daily recording.

An exercise book, squared in half inches, is convenient for the various charts, but not very satisfactory for drawings or notes ; much better is a book with ruled pages interleaved with plain paper, suitable for drawing. If these are not available, some plain and ruled exercise books can be unfastened and re-combined by the children themselves, who will sew the few leaves together and make a brown or coloured paper cover, which will necessitate the planning and carrying out of interesting designs according to the ideas of individuals. (*See* Fig. 8.)

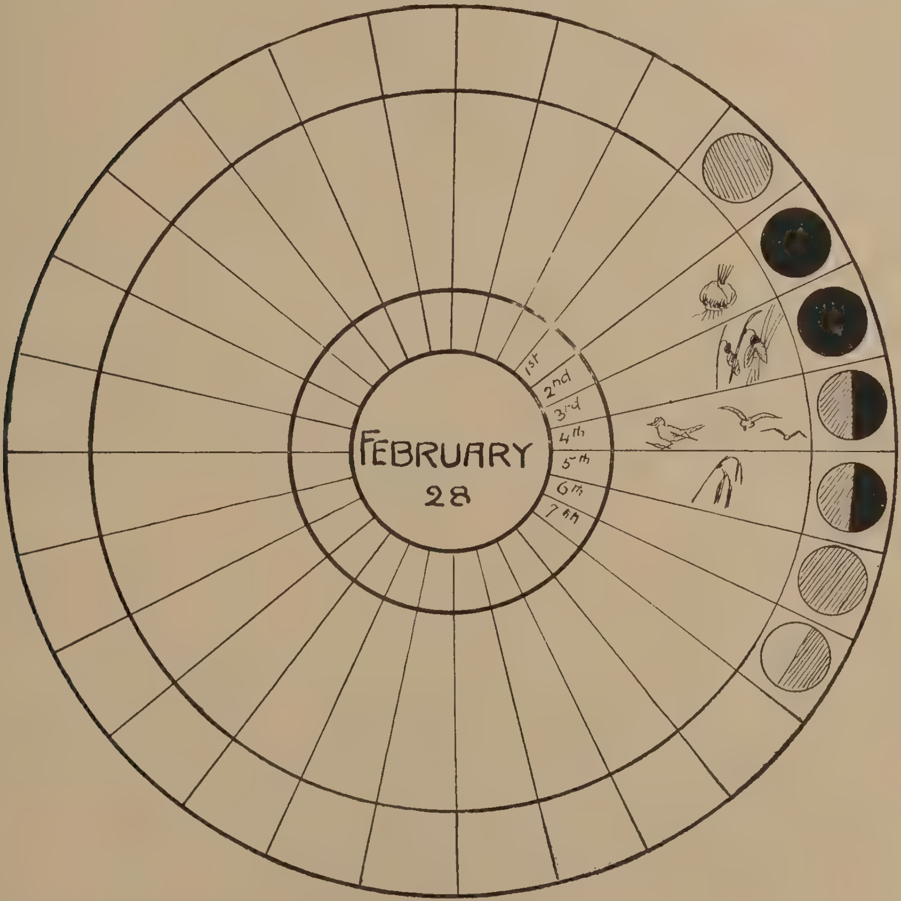
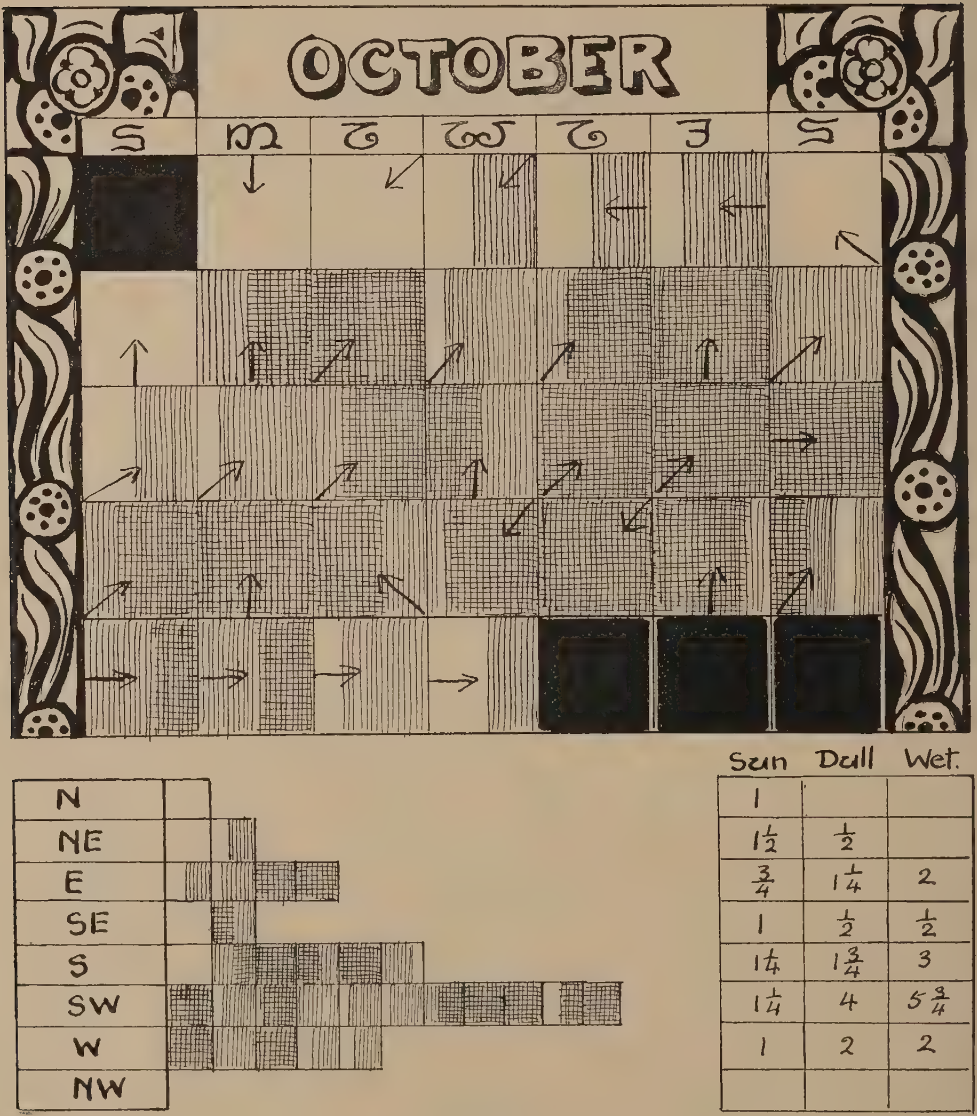


FIG. 6

Nature Record for Month



Sun	Dull	Wet.
1		
1½	½	
¾	1¼	2
1	½	½
1¼	1¾	3
1¼	4	5¾
1	2	2

FIG. 7

Weather Chart for Older Children

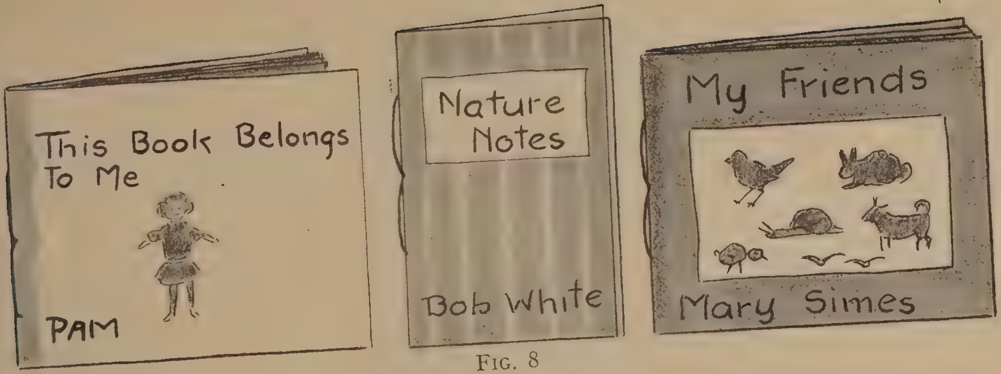

This Book Belongs To Me
PAM
Nature Notes
Bob White
My Friends
Mary Simes

FIG. 8

Children's Nature Books

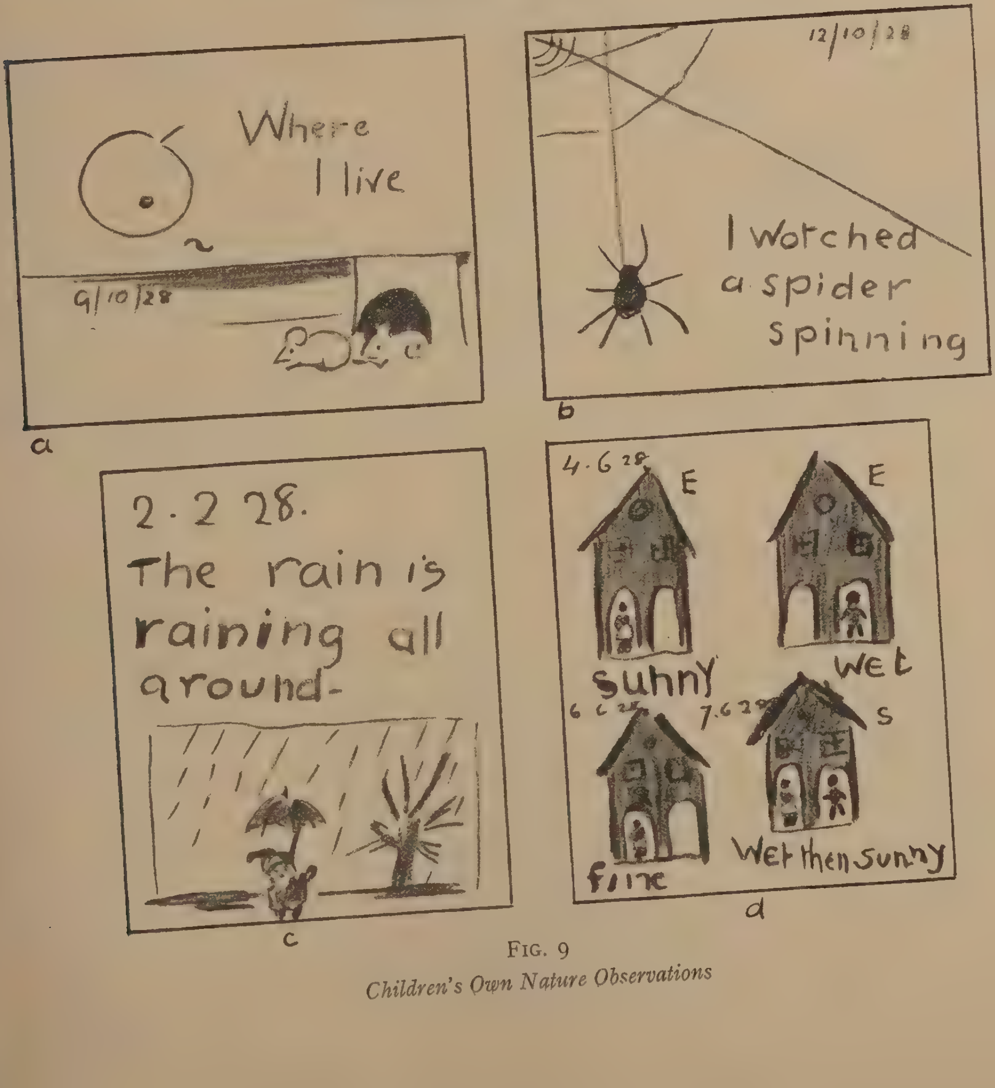

Where I live
9/10/28
a
12/10/28
I worched a spider spinning
b
2.2 28.
The rain is raining all around-
c
4.6 28
E
E
sunny
wet
6 6 28
7.6 28
S
fine
wet then sunny
d

FIG. 9

Children's Own Nature Observations

It is better, at first, to have books just large enough for a month's records, then for a term's. Larger books than these are not satisfactory for children under eight years, who like change. It must be remembered that even to keep a month's records requires persistency and patience, and the teacher should be fertile in suggestion for delightful things to do and record. Variety is all important.

Sometimes observation will be centred on clouds, or on winds, or on measuring of growing plants, or the weighing of young animals, or on gardening news, or on compiling a list of all the trees, plants, birds, or insects in a given area; or again, footprints of animals or birds in snow and mud, could be drawn and named.

Each book should ideally record the term's chief nature adventures and experience of the individual child.

Sustaining Interest

The keeping of individual records, though very desirable, should not be insisted upon for all children in a class, lest such insistence cause a distaste for the subject; but under the influence of a teacher with a real love of Nature, and ability to suggest plenty of interesting things

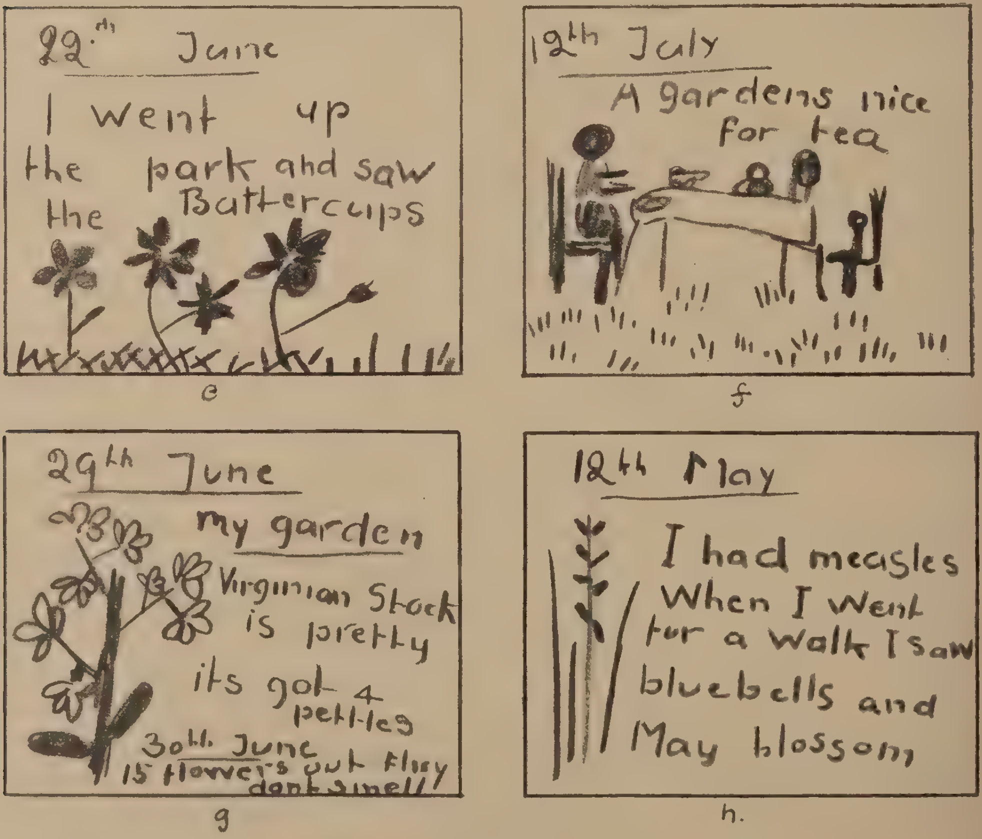

22nd June
I went up the park and saw the Buttercups
e
12th July
A gardens nice for tea
f
29th June
my garden
Virginian Stock is pretty its got 4 pettles
30th June
15 flowers out they dont smell!
g
12th May
I had measles When I went for a walk I saw bluebells and May blossom
h.

FIG. 10

Children's Own Nature Observations

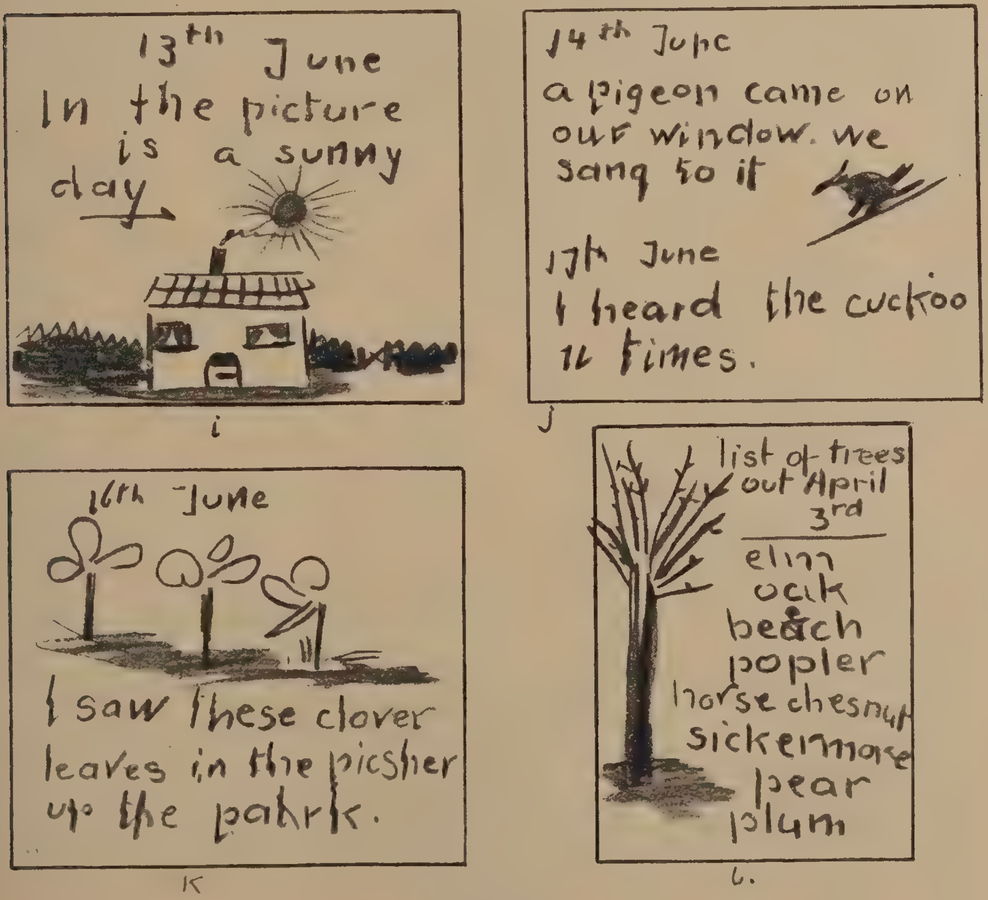
to do, it would be strange if the majority did not wish to work together. With young children effort is spasmodic, and the keener the interest, the more likely is it to subside for a time; hence, although Class Records should be scrupulously kept, the "waves" of individual interest should be watched, and on the signs of waning, other types of work should be forthcoming. In this way there will be no satiety, only a looking forward to fresh nature experiences in the near future.

From Children's Note Books

Illustrations show entries taken from notebooks of children under eight years of age.

The books were made by the children themselves, and covered with coloured cartridge, brown, and wallpaper.

In Figs. 9 and 10 the pages are copied as exactly as possible from the books of four children. Mary S. takes very little interest in plants; she and her family own many pets;



13th June

In the picture is a sunny day

i

14th June

a pigeon came on our window. we sang to it

17th June

I heard the cuckoo 11 times.

j

16th June

I saw these clover leaves in the picsher up the pahrk.

K

list of trees out April 3rd

elm
oak
beach
popler
horse chesnut
sickermore
pear
plum

l.

FIG. 11

Children's Own Nature Observations

almost every page in her book is connected with animal life. (*a*) shows a maggot looking at his home in an apple, below are a pair of mice who have discovered a home in a tree trunk. Mary's parents had just bought a new house, and the child could think of little but homes. (*b*) was drawn from memory after she had watched a garden spider for a very long time.

Fig. 9 (*c*) and (*d*) are from Bob's book; almost every page has some reference to weather, especially to rain.

Fig. 10 (*e*), (*f*), (*g*), (*h*) are the work of Pam, who owns a garden, and is for the present more interested in plants than animals.

Fig. 11 (*i*), (*j*), (*k*) are pages from the book of Ella T., which shows no special preferences, anything noted is drawn. This is by far the most usual type; the others were chosen for their special interest.

Fig. 11 (*l*), the work of Karl H., is an attempt at classification.

Under the influence of the teacher, the Class Nature Record is often quite a complicated production, but the individual records of children show much greater simplicity.

NATURE STUDY FOR EACH SEASON

SINCE it is desirable that children should gain as much as possible of the feeling of movement, and the changes in Nature through the year, it is useful to have a list of what may be looked for each month.

Any *one* list can only be suggestive, because conditions of schools over the country vary greatly; hence each teacher should, with the children's help, draw up her own list of Nature happenings, and if checked each year, it should form a very valuable guide to suggest material for out-of-doors observations.

The following list shows what may be expected in the South of England, but flowers and migratory birds may be seen at least a fortnight later in the North. Even within a district, there will be differences in the first appearance of flowers; thus, while hawthorn buds generally do not open until March or even April, there may be a sheltered bit of hedge, where the delicate green can be seen in January. April is the month of primroses, but often children can find a warm nook where these flowers are out in December.

Only the most common animals, insects, flowers, etc., are mentioned in this list, and purely local varieties are excluded.

SPRING

THE MONTH OF WINDS

Animals of Fields and Woods

SQUIRREL shakes off winter lethargy, eats tree buds, pine seeds (look for centres of cones under trees), strips off bark in young trees, to get at the sappy layer.

Bat, hedgehog, dormouse waken from winter sleep.

Hares may be seen rushing across fields—"As mad as a March hare." Choose their mates.

Rabbits prepare for first family.

Foxes call to one another. Mating time.

Water Creatures

Frogs and toads spawn. Spring chorus of frogs.

Spawning time for some river fish; protected by law till June.

Very little pond life to be seen.

Insects

Bees seek early flowers as crocus and willow.

Cabbage white, and brimstone butterflies.

Pine beauty (caterpillar on pine and fir), Hebrew character (caterpillar on oak and sloe), chestnut, and orange underwing moths are most common.

Birds

Summer visitors begin to arrive—wheatear, chiff chaff, willow wren, and yellow warbler are earliest.

Some winter visitors depart—teal, woodcock, shoveller, snipe, redwing.

Nesting—blackbird, thrush, rook, robin, plover, partridge.

In song—blackbird, thrush, tits, robin, chaffinch, greenfinch, yellow hammer, wren.

Plant Life

Flowers—Anemone, aconite (winter), coltsfoot, celandine, butcher's broom, daffodil, dandelion, dog mercury, marsh marigold, sweet violet, spurge laurel.

Tree buds swell, and by the end of March some, as horse chestnut, sycamore, lilac, are out.

Elm in flower.

THE MONTH OF OPENING—EGG AND SEED-TIME

Animals of Fields and Woods

MOLE hills, very freely thrown up in loosened soil.

Squirrel looks out summer drey.

Bats hawk for gnats after their winter sleep.

Water voles on banks of ponds and rivers.

Rabbits nesting.

Water Life

Tadpoles of frogs and toads.

Water measurers, whirligig and other beetles, caddis larvae, and water boatmen begin to be seen.

Gudgeon spawns.

Insects

Commonest butterflies—Small heath (caterpillar on grass); small copper (caterpillar on dock and sorrel); azure blue, this is the most common blue around London, the first brood of its caterpillars to be sought on holly and ivy; orange tip.

Birds

Chief month for arrival of summer visitors—Ring ouzel, sand-martin, common sandpiper (early April); swallow, martin, nightingale, black cap, cuckoo (mid-April); garden warbler, red backed shrike, swift, turtle dove (end April).

Last of the winter visitors depart—Fieldfare, jack snipe, golden-eyed duck.

Birds in full song, specially heard in concert at dawn. Chief month for nesting.

Plant Life

Chief wild flowers—Bugle, bog bean, cinquefoil, chervil, cotton grass, daisy, dog violet, fumitory, garlic mustard, great stitchwort, herb Robert, ground ivy, lords and ladies, moschatel, mouse ear, milkmaids, periwinkle, primrose, speedwell, tormentil, woodruff, wallflower, wood sorrel, whortleberry, wild strawberry.

Trees in flower—Sycamore, wild cherry, apple, pear, plum, sloe, alder, sallow, willow, poplar, guelder rose, currant.

Tree buds opening, and by the end of the month many leaves out, but most remain small until the catkin flowers have been pollinated. Weather greatly affects the opening of leaf buds.

Trees	*Bushes and Hedges*	*Hedge Banks*	*Ground*	*Holes and Crevices*
Magpie Heron Chaffinch Bullfinch (holly, yew)	Hedge sparrow Jay (in saplings) Wren Long-tailed tit Chaffinch Bullfinch Linnet (gorse)	Robin Wren Yellow hammer	Skylark Meadow pipit Lapwing Wood wren Willow wren Yellow wagtail Wild duck	Sparrow Starling Great tit Cole tit Blue tit Nuthatch Wheatear Tree creeper

THE MONTH OF FLOWERS

Animal Life in Fields and Woods

THIS is one of the chief nursery months, and young families of mice, voles, moles, rabbits, hares, and foxes abound.

Foxes very venturesome, rob hen-roosts to get food for cubs. Hedgehog hunts for eggs of ground birds.

Water Life

Newts spawn. Tadpoles. Frog and toad tadpoles develop hind legs.

Water spiders, beetles, measurers, boatmen, scorpions active ; dragon fly larvae—many in pupal conditions.

Insects

One of the chief months for appearance of butterflies. Among the most common are—Orange tip, pearl-bordered fritillary, wall brown, common blue, the grizzled skipper (caterpillar fastens blackberry and bilberry leaves together), dingy skipper basks in sun on the ground and in flowers, first broods of caterpillars of cabbage white, and green hair streak (oak).

The chief moths are—Humming bird hawk, elephant hawk (flies at dusk over soapwort and later on, petunias), poplar hawk, common swift, pale tussock, common tiger, puss moth.

Other insects—bees, wasps, ants, aphides, cockchafers, gall flies, cuckoo spit, wild bees swarm.

Birds

Last of the Summer visitors arrive—Spotted flycatcher, nightjar, corncrake, quail, dotterel.

Bird music reaches its climax.

Many birds that nested last month have young and are busy hunting caterpillars, grubs, worms, the chief food of nestlings.

Birds nesting—

Trees	*Bushes and Hedges*	*Banks*	*Ground*	*Holes and Crevices*
Turtle dove	Blackcap Red-backed shrike	Kingfisher	Whinchat Nightingale Nightjar Woodlark Landrail Pheasant Partridge	Spotted woodpecker Green woodpecker Swift Sandmartin House martin (eaves)

Plant Life

Chief wild flowers are—Bittersweet, bluebell, butterwort, bog bean, buttercup, campion, carrot, clover, cowslip, cranesbill, dock, eyebright, hop trefoil, hedge parsley, mayweed, marsh violet, oxlip, orchis, rock rose, ragged robin, silver weed, sanicle, speedwell, sundew, traveller's joy, vetch (yellow), wild pea.

Grasses—Cat's-tail, fox-tail, fescue, sweet vernal, meadow, rye, oat.

Ferns unfold quickly—Bracken, basket, lady, and shield ferns in woods, poly pody on banks and tree trunks, common harts tongue and maidenhair on damp banks and stone walls, wall rue on limestone rocks and walls.

Trees in flower—Holly, spindle, buckthorn, cherry, hawthorn, elder.

Shrubs—Broom, gorse, rhododendron, dogwood, guelder rose, sweet gale.

SUMMER

THE MONTH OF ROSES

Animal Life in Fields and Woods

MANY of the mouse family nest—harvest mice among stems and leaves of corn ; field mice in banks ; dormice in dense parts of thickets.

Squirrels born in summer drey.

Rabbits prepare burrow for another litter. Commons and waste places overrun with young.

In parks and woodland parts, where deer run, fawns are to be seen.

In fields, calves, foals, kids.

Lizards, grass snakes, blindworms abundant on sunny banks.

Water Life

Young frogs and toads attain full development and prepare to leave ponds and ditches.

Beetles, spiders, dragon flies, water scorpions, and boatmen, gnats and mayflies to be seen in larval and adult stages. This month the most crowded for pond life. Dragon flies hawk for flies over water.

Insects

One of chief months for *butterflies*. Look for brown fritillary about brambles ; small tortoiseshell, peacock, white and red admirals, and large skipper.

Moths

Six spotted burnet, elephant hawk moth towards dusk, among petunias ; privet, and lime hawk ; currant clearwing ; golden swift (the male has the scent of pineapple to attract the female) ; goat moth, dark tussock, cinnabar, buff tip, light arches, and pugs.

This is the chief month for plant pests, such as green and black fly, cuckoo spit, scale insects on fruit trees, rose beetle, red spider on hops, cockchafer on oak, earwig. Wasps and bees swarming. Grasshoppers abundant. Glow worms in hedges.

Birds

Birds begin to leave off singing ; though nightingale, chiff chaff, robin, thrush, blackbird, blackcap, wood pigeon, turtle dove are still in good song, especially in evening.

Cuckoo changes his tune.

Most birds have young, and many are sitting on second batches of eggs.

No arrivals, and no departures

Plant Life

In this month wild flowers reach their fullest beauty, especially in hay meadows. Look for agrimony, bedstraw, bindweed, black bryony, broomrape, cocksfoot grass, corn marigold, cow wheat, columbine, carline, and other thistles ; dog daisy, foxglove, garlic, heartsease, helleborine, honeysuckle, iris, leopard's bane, meadow-sweet, milkwort, medick, melilot, mustard, nightshade, orchis (man, fly, bee, butterfly, pyramidal); quaking grass, scabious, vetch (purple), wood betony.

Chief time for grass cutting—hay time.

Trees

All in full leaf. Mountain ash, lime, maple wayfaring tree in flower. Elm fruits fall, also poplar catkins, with the white down showing from burst capsules.

THE MONTH OF INSECTS

Animals of Fields and Woods

MANY young animals take to the cornfields which, during this month, become a sanctury for hares, young foxes, mice, rabbits, as well as for ground birds.

Water Life

Bream and tench spawn. Many small fish to be seen in shallows of ponds and rivers.

Dragon flies busy over water.

Last of young toads and frogs take to the fields.

Insects

The third of the chief months for the emergence of butterflies and moths.

Butterflies—Pale clouded yellow, silver washed and dark green fritillaries; large tortoiseshell, meadow brown, large heath, purple hair streak; azure blue has second batch of eggs, chalk hill blue, small skipper, etc.

Moths—Common footman and white ermine near trees; common wainscoat, yellow underwing, turnip, old lady, common magpie, carpet, etc.

Ants fly.

Bees kill drones.

Nut, pea, and other weevils active.

Lacewing flies.

Bluebottles and houseflies very troublesome.

Birds

This month is the silent time for birds. Many moult. A few begin to assemble in flocks; lapwing, starling, small bands of great tits.

Cuckoo leaves. Young cuckoos practice singing.

Young birds plentiful about the hedges, hunting for flies, caterpillars, etc.

Plant Life

The chief special wild flowers are—Arrow head, bellflower, blackberry, corn marigold, cornflower, corn cockle, centaury, chicory, enchanter's nightshade, forget-me-not, field pansy, great celandine, great convolvulus, hops, lady's mantle, mallow, mullein, mignonette, privet, poppy, rest harrow, rosebay willow herb, rattles (red and yellow), reed mace, rushes, twayblade, toadflax, yellow iris, willow herb, water plantain, water lilies.

Fruits

Wild strawberry, raspberry, bilberry, rowan, snowberry, wild cherry.

Trees

Young fruits swelling, can be clearly seen on oak, beech, pine, sycamore, plane, etc.

THE MONTH OF HARVEST

Animals of Fields and Woods

YOUNG animals grown up, but still some, as rabbits and squirrels, may be seen at play. Food plentiful; all wild creatures eat freely to add to the fat under fur and hair coats.

Water Life

Nearly all creatures that are to emerge this year from the larval state leave the water; gnats abound.

Insects

A great falling off in fresh arrivals, the painted lady appears, and the cabbage white, common blue, green hair streak.

Butterflies have second batches of eggs.

Of moths, the oak egger is one of the chief new ones; the vapourer has first brood of caterpillars.

All kinds of flies very troublesome, especially to horses and cattle.

Chief month for wasps, as plums ripen.

Grasshoppers and crickets very abundant on commons and grasslands.

Click beetles, daddy-long-legs, earwigs numerous.

Birds

This month some of our *summer visitors depart*—wheatear, nightingale, cuckoo, dotterel, and swift (end of month).

Flocking is very general, especially starlings, plovers, sparrows, wood pigeons, linnets; birds visit cornfields where harvest has been carried; and small parties of wrens and chiff chaffs come to gardens.

Swallow, martin, bullfinch, greenfinch, have late broods.

Plant Life

Few wild flowers are special to August, but most prominent are—Autumnal hawkbit, harebell, heather, ling, tansy, evening primrose, teasel, flowering rush, goldielocks, ragwort, water persicaria, woodsage, white bedstraw.

Fruits—the harvest month. Hops, sloe, mountain ash, wild service, early blackberries.

AUTUMN

THE MONTH OF MIGRATION OF BIRDS

Animals of Fields and Woods

ANIMALS which lay up winter stores very active; e.g. squirrels and various mice. Coats become thicker.

Rabbits feed early morning and late evening.

Rats leave ditches for drier places.

Frogs, toads, and newts begin to grow torpid; also snakes and lizards.

Snails collect in holes or among roots of such plants as iris. Woodlice very active at night.

Worms bury leaves, stems seen protruding from burrows.

Insects, etc.

Several small moths emerge, but those the children are most likely to see are black rustic, deep brown dart, gallow, and brindled green.

Cabbage white caterpillars devour "greens" of all kinds.

Wasps still abundant, but getting drowsy. Humble bees "sleepy."

Daddy-long-legs and spiders very numerous.

Many insects in larval or pupal forms hide up in crevices, or in earth near the roots of trees.

Birds

Chief month of *departure for summer visitors*—Wheatear, nightingale, blackcap, chiff chaff, willow wren, spotted fly catcher, swallow, martin, sand martin, nightjar, turtle dove, sandpiper, arctic tern.

Early winter visitors are—Teal, shoveller, and pochard; many more wild duck, and jack snipe.

Many young birds to be heard practising songs.

Plant Life

No fresh flowers, though hedges, commons, and stubble fields still show many old varieties.

This month leaves begin to turn colour, but their chief glory is still to come. Trees in large towns begin their leaf fall.

Fruits abundant—Apples, pears, damsons, grapes, hips and haws, blackberries, spindle, privet, yew, bryony, honeysuckle, sloe, crab apple, acorns, beech mast, hops, walnuts etc. Air full of floating seeds of thistles, daisies, willow herb, dandelion, clematis, etc. Winged fruits of sycamore, maple, ash, hornbeam, etc., fall.

THE MONTH OF NUTS AND AUTUMN TINTS

Animals of Fields and Woods

HEDGEHOGS, dormice, bats, etc., begin to hibernate at end of month.

All frogs, toads, newts, retire for the winter to quarters not far from water.

Snakes and lizards hibernate.

Squirrels and mice still busy storing nuts.

Insects, etc.

Although many moths and butterflies are still about, the chief special October moths are—Orange, upper wing, December chestnut, angle shades; vapourer has second brood of caterpillars.

Gossamer spiders very busy; webs of garden and other spiders decorate all bushes and brambles.

Birds

Last of the summer migrants depart—Shrike, last martins, arctic tern.

Winter visitors arrive in numbers—Red wing, fieldfare, pintail duck, wigeon, teal, golden eyed duck, skylark, wood pigeons, snipe, woodcock.

Many birds in large flocks—rooks, plover, wood pigeons, jackdaw, some finches.

Rooks take walnuts; nuthatches visit hazel bushes.

Rooks visit rookeries and may start a little repairing.

Plant Life

Ivy flowers provide much honey.

Leaves turn characteristic shades of yellow, orange, flame, and brown. Most deciduous trees drop their leaves and show new leaf buds.

Fruits—the chief month for nuts—hazel, cob, walnut, sweet chestnut.

Horse chestnut, beech mast, acorns fall.

Holly berries become scarlet. Late blackberries.

Mushrooms and many fungi, especially in damp seasons.

Root crops—mangolds, turnips, beets, swedes, lifted and clamped.

THE MONTH OF MISTS AND WINTER SLEEP

Animals of Fields and Woods

VERY few signs of animal life. Most are hibernating, or hiding up in holes and crevices with their stores.

Rabbits and hares to be seen, especially in early morning.

Insects

Winter moth busy about fruit trees, does much harm. Most butterflies and moths hibernating in adult or pupal stages.

Late bees at ivy flowers.

Gnats and midges seen on sunny days.

Flies hibernate indoors.

Birds

Gulls come inland to follow plough.

Flocks of wood pigeons feed on beech mast.

Flocks of linnets, redpoles, finches, yellow hammers, plover, and starlings. Seed food still plentiful.

Plant Life

Deciduous trees, helped by mists and gales, finish shedding leaves.

Holly and mistletoe berries.

New catkins show on alder and hazel.

Ivy flowers still attract late insect visitors.

Mosses luxuriant, and of brilliant colours.

WINTER

MONTH OF EVERGREENS

Animal Life of Fields and Woods

ALL hibernators asleep. Rabbits gnaw bark, and hares can be seen in the early morning.

Insects

Mostly hibernating or dead. Look for pupae on north sides of trees, in crevices, or buried in earth near roots. Some insects, such as queen wasps and humble bee, hibernate under ivy and other leaves.

Few midges and gnats on sunny days entice bats.

Birds

Many winter arrivals of the duck family. Gulls come to towns and inland, in search of food.

Our resident birds, as robin, thrush, blackbird, starling, tit, become tamer and approach houses for scraps.

Plant Life

The month of evergreens—ivy, yew, box, fir, holly, laurel, mistletoe.

Xmas roses.

In sheltered nooks, the first primroses may be seen.

Crocuses and snowdrops pushing up leaf spikes.

Mosses and lichens very brilliant.

THE GATEWAY OF THE YEAR

Animals of Fields and Woods

HIBERNATORS asleep.

Partial hibernators, as squirrel and some mice, feed on stores but sleep much.

Rabbits feed on commons and meadows; out much on the short days.

Bat comes out on sunny days for midges.

Insects

A few small moths about, but the most destitute month for insect life.

Birds

Much as in December. Robin selects nesting site.

Rooks visit rookeries.

Missel thrush, robin, hedge accentor, thrush, blackbird begin to sing.

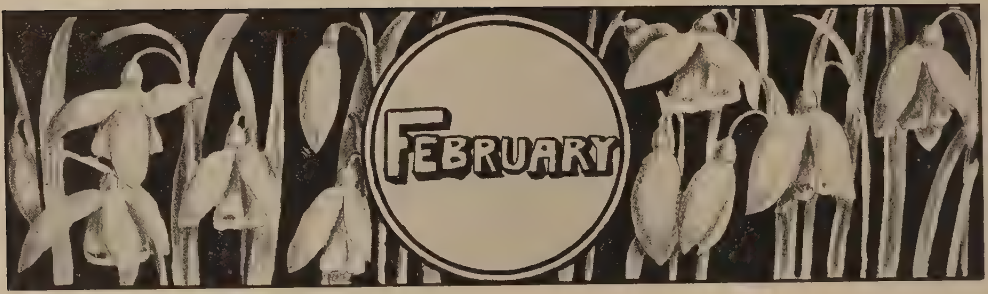
Wild birds become very tame.

Plant Life

Spurge laurel, daphne, winter jessamine, hellebore, winter aconite in flower.

Honeysuckle leaves open.

Hazel catkins lengthen.



THE MONTH OF PURIFICATION

Animals of Fields and Woods

SQUIRRELS eat pine seeds. Rabbits nibble at gorse, and gnaw bark.

Hare seeks shelter of hedgerows.

Young lambs in parts of country.

Birds

Much as in January. Many birds still in flocks.

Rooks repair rookery preparatory to nesting.

Some birds as chaffinch, robin, sparrow, tits, seen more often in pairs—a sign of approaching spring. Many, as thrush, blackbird, robin, sparrow, look out nesting sites, and the two former in very mild seasons begin to build.

More birds in song. Thrush and blackbird sing early morning.

Plant Life

Early flowers—snowdrop, crocus, winter aconite, sweet violet, hellebore, hazel, alder, yew, daphne.

Elms look "fuzzy," flower buds developing.

Mosses very vivid.

In sheltered hedges, honeysuckle shoots vividly attractive, and hawthorn buds show a little green.

HOME PETS AND SCHOOL PETS

ONE of the best ways of introducing children to a study of animal life is through talks on the pets which share their homes. It is obvious that the teacher herself must know what pets her children possess, and an excellent plan is to put up a list of animals on the blackboard, together with a few questions, and in the time set aside for writing exercises invite the children to give an account of those they possess. A hektographed paper, as illustrated in Fig. 12, may be given to each to fill in.

When these papers have been collected, the teacher should enter the list of animals in her own book, making mental notes as to whether she considers the pets properly taken care of with regard to food, drink, baths, sleeping accommodation, etc.

Name of child..

Put a cross (×) *against any of these pets which you have at home—*

dog.....................

cat.....................

rabbit.....................

squirrel.....................

guinea pig.....................

mouse.....................

dormouse.....................

canary.....................

parrot.....................

other bird.....................

tortoise.....................

any other pet.....................

Who feeds it?..

What food do you give it?..

....

How is it kept clean?..

Where does it sleep?..

Write anything you like about your pet..

....

....

FIG. 12

Some of them, such as rabbit, guinea pig, tortoise, dog, could be invited, one at a time, to come to school; or in small schools, the teacher might go with the children as part of the Nature "walk" to visit some pets at home. There is no better way than this for arousing such interest as will make the coming talks of value to the children, and of benefit to the pets.

An Improvised Dog Show

One country school comes particularly to mind; the teacher found that dogs in the village were taken so much for granted, that they received no attention beyond irregular feeding; talks were given on feeding, the necessity for plenty of clean water, care of coat, comfortable provision for sleeping, the need of daily exercise, the games dogs like to play, etc. Later a "Dog Show" was announced, with prizes for the best groomed and best conditioned dogs, and that Saturday was one of the red letter days of the year, in spite of—or perhaps because of—the difficulties of leading in, and keeping in order, unruly pets in improvised pens.

In talks on animals, the teacher should not be over-conscientious as to details of structure that convey little of real importance to the child's mind.

Far more vital to the enlargement of sympathy and understanding is the knowledge that leads to more intelligent care of the pet. What an animal *does*, or attempts to do, is always more interesting than its appearance; and facts and tales relating to its ancestors, before man took it to share his home, find ready listeners.

Talks about Dogs

In the list of pets, dogs naturally come first; and a description of those in the homes will lead to a comparison of the different varieties, long-haired and short-haired; collie, spaniel, greyhound, terrier, sheep dog (Fig. 13), etc. Let children measure, with two separate pieces of string, the height of their dogs, and the girth round the chest just behind the front legs. These may not give very accurate data for deduction, but some relationship of length of leg and depth of chest to speed may be suggested, this would be brought out well by a comparison of a greyhound and a spaniel.

Other facts of interest are the sociability of dogs, which makes them such excellent companions; their quick intelligence, which enables them to be taught so many things (find out from the children what their own pets can do); their readiness to guard their owner's property. This will naturally call out remarks on the respective merits of "Bob," "Spot," or "Nigger" as a house dog.

The teacher can supplement with stories and anecdotes of dogs which have nearly starved, sooner than leave the master's property they were ordered to guard. This guarding may be connected with the ancient pack life of dogs, where in turn, each had to guard the grass lair of its comrades.

Children's Comments and Observations

Children often comment on the dog's habit of turning round two or three times before lying down, and the teacher can tell of how, ages ago, it learned to do this when it scooped out of a clump of tall grasses a comfortable sleeping place, and the habit has remained, though it is now of little use.

Talking about food leads to stories of how dogs hunted in packs, and what they hunted, and this should be associated with the development of speed, the strong legs and the keen nose, which enable the dog to follow the trail of an unseen quarry. Children will be interested to note how their own dogs run with noses near the ground, and they may realize how useful is this power of scent—for even in a crowded street a dog can find his master, when temporarily lost to sight.

Why Dogs Bury Bones

The habit of burying bones is sure to be familiar. Connect this with the killing of more meat than the dog could eat at a time, and the hiding of the surplus for the bad days, when no game might be found. Dogs have so little sense of taste, that they do not mind if their meat is not quite fresh. Look at the dog's foot to see the blunt strong claws which enable it to bury bones and to dig rabbits out of their burrows.

The most important part of the talks will be on the care of the children's own pets. They should be told how and when to feed them: the best kind of food are bread, house scraps, bones with a very little meat, dog-biscuits. One good meal a day, in the evening, is better than two or three smaller ones, because it is more in keeping with the dog's original habits. Bones are essential, and help keep the teeth in order; fresh water in a clean dish must be given every day.

The dog's condition depends mostly upon right feeding; we should be able to pick up a handful of loose skin anywhere on the body, and the nose should be cold and moist.

To keep a dog's skin in good order, he needs brushing; also, as he easily picks up fleas in his coat, a bath or swim in summer is essential. Fleas can be got rid of by soaping the hair, letting it stay on for two or three minutes, and then rinsing it off. On no account should water be put near the ears; few children like having their ears washed, hence will readily remember this fact, though the real reason—prevention of canker—is beyond them.

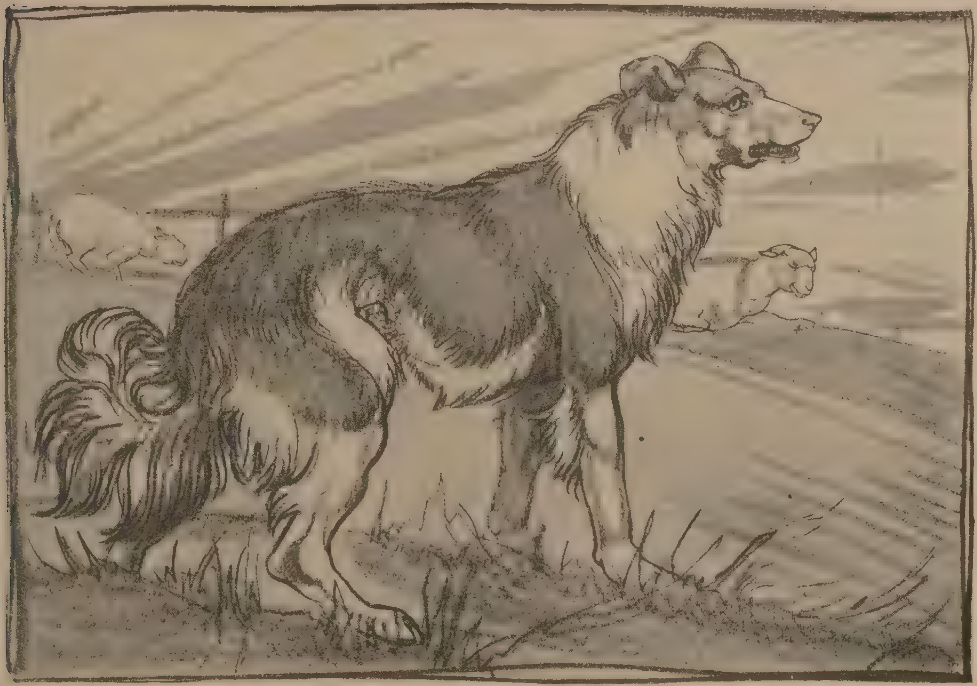


FIG. 13

The Collie: A Good Sheep Dog

How Dogs are Useful to Man

The adaptability of the dog, and its usefulness to man, can best be brought out by telling of some ways in which its help is indispensable, e.g. in dragging sledges of travellers in the Far North, thus making journeys possible; in taking round milk in special carts to the housewives of the Netherlands; in finding travellers lost among the mountains (refer to the dogs of St. Bernard, page 679); in co-operating with shepherds on moor and hillsides, to care for the large flocks of sheep, etc.

Dogs should be given comfortable and dry sleeping places. If kept indoors, they reward us by guarding our homes at night; if chained outdoors to kennel, or upturned barrel, it is most important to see that their quarters are dry, with clean straw to lie on in winter. No dog should be chained up all day; it is neither kind, nor conducive to health; also, a chained dog is apt to become irritable and bad-tempered.

Although children seldom have control of the dog in the home, this is the "day of the child," and many parents will, with good natured toleration, "humour" the little one who comes home from school with tales of what "my teacher says." Also this teaching may bear fruit later on, when the child grows older and has full charge of a pet animal.

Talks about Cats (*Fig.* 14)

It is the misfortune of cats that they are generally brought into contrast with dogs, whose fidelity, intelligence, and devotion are so often the subject of admiration. But it is not really fair to compare creatures so differently constituted. It is true that the dog has become the willing slave of man, but at the expense of being a traitor to his own order. We applaud it because it is to our own interests. The cat, on the other hand, never forgets her natural dignity, nor will she outrage any of her inherent propensities for the gratification of man. She is the aristocrat and loiterer, never the parasite. She lives with us and enjoys being petted, but she never makes our interests her own.

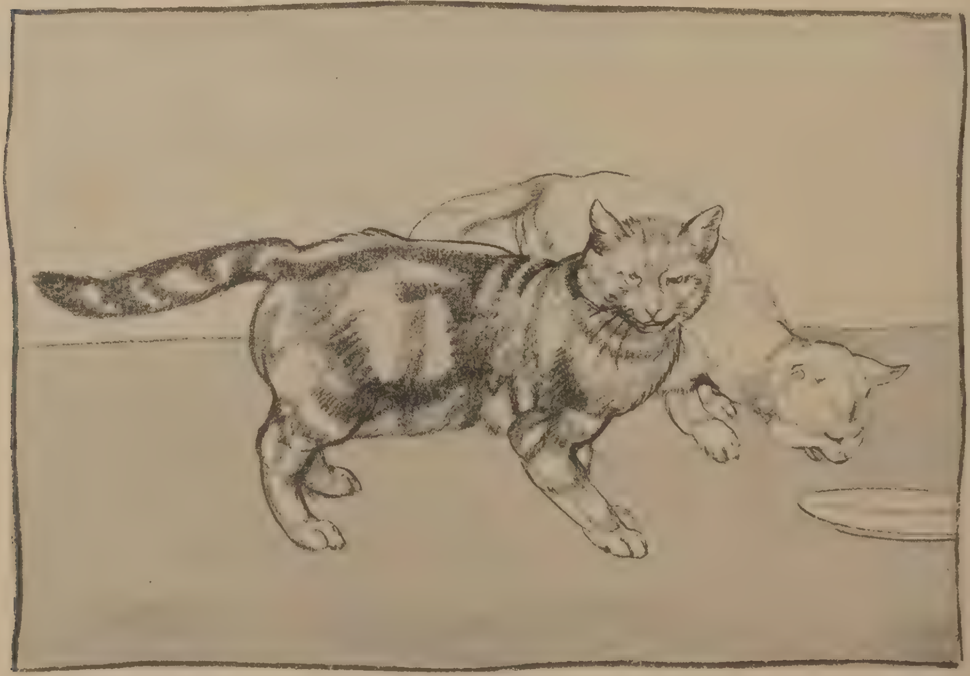


FIG. 14

Cats

Pussy's Needs and Habits

Her needs are different from those of the dog. She does best on a purely carnivorous diet of fish, flesh, and milk. If the children feel her tongue, they will note its roughness, which might be compared with a file, useful in rasping off fragments of flesh and fish.

Although we may feed her well, she loves to get out at night and hunt for mice and small birds. It is not quite true to say that a cat can see in the dark, but she has eyes that will open widely to let in every ray of light, so that she can see in places which to us would seem quite dark. With her thick coat for protection against cold and wet, and softly padded paws in which the claws are sheathed, so that she walks and climbs noiselessly, she is a formidable hunter of small game. During the day she sleeps much, either before a fire, or on some sunny window-ledge or comfortable chair.

Few dogs can catch a cat when both are running at full speed, and the cat always has the better chance, for directly she comes to a tree, out come the long claws that dig into crevices of the bark, and she is up in a moment, leaving the heavier and less agile dog to wait below in rather hopeless expectation.

Nor can she be outclassed in patience. Knowing she is safe, pussy goes to sleep on the branch with "one eye open," and is there when the dog can stand it no longer and trots off.

Pussy's Dainty Manners

She eats daintily and cleanly, unlike the dog, never slopping her food over, or bolting it. She requires no assistance from us in taking care of her coat, and keeps her tongue and paws busy over the niceties of the toilet. Though a kitten is a delightful pet, full of play, now racing round and round after its tail, now chasing a shadow, a moving leaf, or a bit of paper; when grown up, she soon loses the play spirit and becomes increasingly aloof, while the dog, properly treated, is ready for a game or race till he gets well on into middle life.

There is not much children can do for a pet cat beyond seeing that it has a comfortable basket or cushion—though it will usually select one for itself—and regular feeding. In springtime, when birds are nesting, cats should be kept in at night, for it is then that they take such heavy toll of nestlings, many of them of our song birds.

Comparing Cats and Dogs

Some characteristic habits, and details of structure of both pets, may be brought out through comparison, and children should be set such problems as they can solve by observation; e.g. how does a dog talk, or make you understand his wants? How do you know when a dog needs food? a walk? a game? How does he show that he is pleased? angry? sorry? ashamed? Compare with a cat, how does she show need of food? How does she express pleasure? anger? Can you see if a cat is ashamed? or sorry? Does it show if it wants a game? Which walks more quietly? Look at the feet and see if you can tell why. How does your dog keep itself clean (licking, rolling, swimming)? Compare with a cat, and bring out the cat's distaste for water.

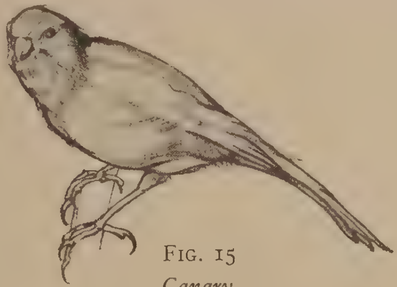


FIG. 15

Canary

The Pet Canary (*Fig.* 15)

Another pet that brings much cheerfulness into the home by its bright yellow, or variegated colour, and its joyful, but rather boisterous song, is the canary. Children who own these birds will like to hear something of the Canary Islands, far away across the seas, which was their original home; but where, strange to say, their colouring is less bright, being rather dusky grey. To make up for not being conspicuous to the eye, the voice is louder, though it sounds far more beautiful when heard amid palms and orange trees, than it does in our houses, which are far too small to do it justice.

Like the sparrow, it has a very hard beak for cracking the cases of seeds on which it chiefly feeds. It is so intelligent, that it is easily tamed, and will come out of its cage to take seeds from one's fingers, or fly about the room. When taming this, or any kind of bird, children should be taught to come quietly near, never to make a sudden movement or loud noise, and never to look directly at it. Wild birds, such as robins and thrushes, can be tamed by throwing down crumbs, worms, or seeds, and by making no movement or looking directly at them till their shyness has worn off. They are quicker than any other animals to respond to friendly overtures.

The Canary's Needs

The requirements of canaries are very simple: fresh canary seed, millet, with a very little hemp, which they like exceedingly, but which is heating when birds are caged; a sprig of groundsel or plantain, for salad; fresh water; and plenty of clean dry sand at the bottom of the cage.

These birds, like most of the finch group, delight in bathing, and a shallow receptacle, partly filled with water, should be put into the cage every morning before cleaning it, so that the canary will be accustomed to taking his bath early.

Out-door Animal Pets—Rabbits

Other animals which we associate with children, but for obvious reasons cannot make inmates of our homes, are rabbits, guinea pigs, and white mice. These are usually kept in hutches, in a garden or backyard. (Fig. 16.)

Rabbits should be fed three times a day. In

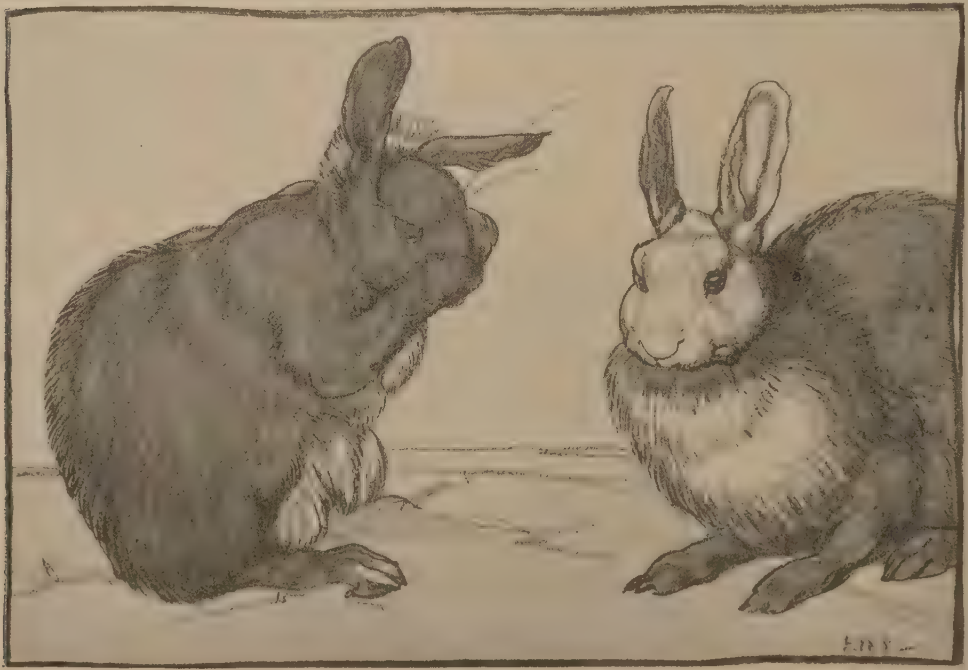


FIG. 16
Rabbits

the morning, green food, such as lettuce and cabbage leaves—especially the stump—carrot and turnip tops, with an occasional carrot, turnip, or parsnip ; dandelion and clover leaves, should be given. Care must be taken that all green food is fresh and *dry*, else the rabbits suffer pain. At middle-day some oats, bran, or meal is the best food ; and in the evening give a last meal of green stuff. It is generally believed that rabbits do not need water, but when the food is dry, or the mother is nursing young ones, water is essential.

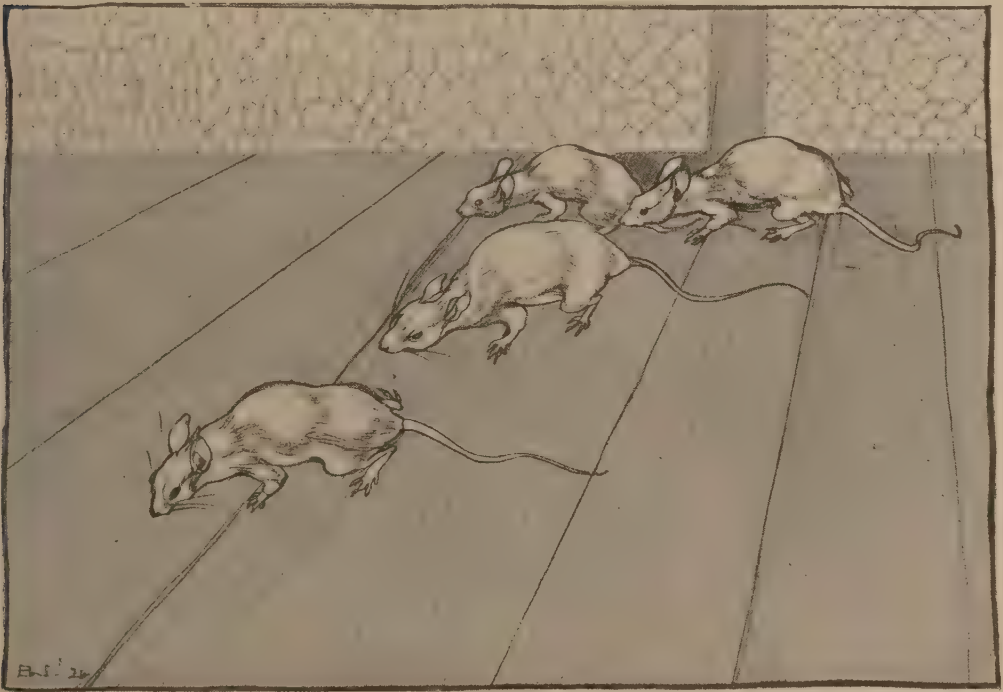


FIG. 17

Tame Mice

How the Rabbit Eats

Note how they eat, holding much food in their paws, and two rabbits will often nibble the same leaf. The upper lip is cleft, and can be moved out of the way to make room for the sharp chisel teeth which can bite into a carrot, or gnaw a piece of wood. Two of these teeth can be seen in the upper and lower jaws respectively, but on the upper there are two more that cannot be seen. Children should be told that these teeth, like their own finger nails, keep growing and have to be sharpened, which the rabbit does by gnawing bits of stick, and if the children forget to put some in the hutches, they will find that their pets will gnaw the walls of their home and may escape.

Food is bitten off by the chisel teeth, and ground to pulp by the back molar teeth ; hence the rabbit can move his jaws up and down, and sideways, just as the children can. Compare with cat and dog, which do not grind their food, but chop it with an up and down movement of the jaws.

The rabbit is naturally very cleanly, and takes great care of its body, licking parts that can be reached, and combing its long fur with the stiff hairs on the soles of its feet. When it cannot reach any part, it moistens a front paw and uses this as a wash cloth. Children should be taught how important it is to help the rabbit keep clean, by frequently sweeping out the floor of the hutch and renewing the straw or sawdust.

Rabbits Play Games

When lifted out of their hutches (by the ears), rabbits show their delight in being together, and children watching quietly can often see them playing such games as racing, tag, and leap frog.

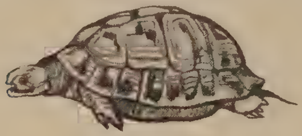


Fig. 18

The Tortoise

It is when they are out of their pens that the characteristic hopping movement can best be seen, and the children can find the answer to the question—Why is it easier for a rabbit to hop than to walk?

Town children may be told of the wild relatives of their pets which live together in warrens, or rabbit towns.

Pet Mice and Others

Mice are interesting pets, but need to be kept scrupulously clean. Their cages should be washed frequently, and thoroughly dried before putting back the inmates. Few animals are so inquisitive as mice, and on re-admittance to their cage, they run all over it, twitch noses and whiskers, and seem as though they are hunting for familiar smells. (*See* Fig. 17.)

In climbing, children will notice how mice are able almost to turn their paws round, and so hang on when climbing *down* precipitous places.

Their food is very simple; they like corn, bits of bread, cheese, fat; and as their teeth—like those of rabbits—are of the chisel variety, soft behind, and hard in front, as they grow, the soft parts wear away and leave a hard edge; they also require bits of stick in their cage. Mice, especially mothers with young, need to drink occasionally.

The Tortoise (*Fig.* 18)

Another favourite pet, especially of town children, is the little Grecian tortoise, though he gives them his company for only half the year. He cannot stand our cold winters, so early in the autumn he burrows into the soil, and passes the bad days away in a kind of sleep. For months, he requires nothing to eat or drink. He scarcely breathes, and lies still without any movement. But as soon as the warm days return, the tortoise awakes and wanders feebly into the sunshine, resting often, then nibbles at a seedling poppy or lettuce.

Children should be warned on no account to dig up and try to waken a tortoise from its winter sleep, or bring it into a warm room. If they do this, they will lose their pet.

Tortoises are strange, cumbersome creatures, living in a bony shell that can be polished to show clearly its yellowish plates, bordered with black, and they manage to live a long time, because they are so safe. On approach of danger they withdraw head, legs, and tail into the bony box, and hardly any creature can hurt them.

Tortoises don't Eat Beetles

One illusion about tortoises needs to be destroyed: they are frequently bought by Londoners to put in their kitchens in the belief that they will eat the black beetles; ignorant vendors actually sell them for this purpose. But the poor creatures are vegetarians, their nearest approach to animal food being a little bread and milk in default of young plants. They eat very little, for never moving quickly or playing, or using much energy, they scarcely know what it is to be hungry.

On warm sunny days they enjoy a bath in shallow water, which is easily provided by sinking a pan into the soil. Of all pets, these are the easiest to keep, for their wants are so few.

ANIMALS OF THE FARM AND FIELD

IN the study of animals, one of the greatest difficulties that confronts a teacher is the problem of giving town children some satisfactory acquaintance with animals of the farm and field. Country children are so familiar with them that the country teacher's problem is to put forward new points of view. It does not do to ignore these creatures, for children's literature is full of allusions to them; hence the teacher must review the possibilities of giving at least an introduction to their life stories.

Opportunities for Observation

Let us see what are the opportunities of first hand observation for London children. Fortunately, horses and donkeys are still to be seen in our streets, and feeding on waste places and fields in the suburbs; sheep are pastured on Hampstead Heath, and in the parks; goats are scarcely ever to be seen; a few dairymen on the outskirts have their own cows, and it might be possible to arrange a visit to the sheds. Chickens and ducks are often kept by the children's parents in the all too crowded backyards—though even these are quite impossible near the centre of the town.

It will be seen, therefore, that for the vast majority of children in the heart of a great city, first-hand study of the larger animal life is almost beyond the bounds of possibility.

Very many children are taken by parents or teachers for country outings and holidays; many go away at hop, pea, and fruit-picking seasons. Knowing this, the teacher can, by the help of good pictures and interesting talks, prepare the children to make the best use of their opportunities, and on their return, after the holidays, can gather up and enrich their observations by adding fresh facts.

Model of a Farm

One of the most interesting ways of introducing this series of talks, will be by working out a model of a farm on as large a scale as possible. Children in the country will be just as interested, especially if a definite farm, known to all, be selected for representation. Models of all farm animals and buildings can be made, or modelled in plasticine (*see Handcraft Section*) and many children would be only too glad to lend their collection of animal toys.

The model will not be used in the place of first-hand observation, but it takes the place of a map or plan, and does make a delightful centre from which to work. A good teacher in the country will set such problems as will necessitate many visits to the different animals, both as part of the school Nature study, and better still, out of school hours, when individual children, spurred by interest, go to verify or find out certain facts.

The plan (Fig. 19) shows a typical English farm, wherein the children are certain to meet most of the domestic and wild animals usually associated with field life.

Visiting the Rabbits

Come one summer's evening across the Pond Pasture to the hill where a path leads through gorse and small oak, beech, and willow bushes to a wood. The gorse flowers, except for a few blossoms, are over, but the bushes are covered with young growth. Among these, on the sandy hillside, is a colony of rabbits out for their evening feeding and games. However lightly we tread, seeking to surprise them, a few old bunnies stop feeding, keep still, rise cautiously on hind legs and sniff the air ; their noses twitch and ears turn to catch the faintest sound—"Man ? . . . yes . . . decidedly . . . perhaps danger." Up come the hind legs, thump ! thump ! thump ! Every rabbit, even the newest baby, stops feeding. "What is it ? . . . shall they stay or run ? . . . What is mummy doing about it ? " Another warning thump, and off dart the fleeing rabbits, each to its burrow. A glimpse of white scuts, as each disappears underground ; then silence and emptiness.

As the eye looks round inquiringly, it passes a patch of shadow near a clump of bracken—passes, and comes back again—for there, hidden from all but sharp-sighted folk, is a little rabbit that has chosen to trust to his grey shadow-like colouring, rather than go indoors this fine night. He watches very closely, his eye showing alarm, his nose alone never still as he waits anxiously on events.

Looking over this rabbit town, we see a number of holes of all sizes, some very large with earth platforms before them, made probably

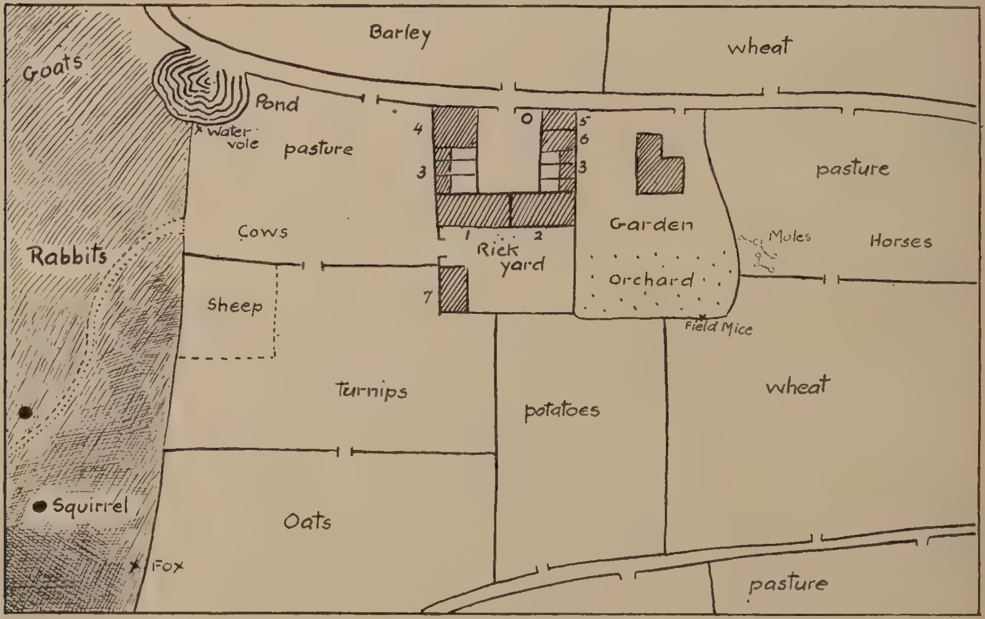


FIG. 19

Plan of Farm

The shaded part shows a sandy hill with gorse and thin scrub near the pond, merging into a wood of oak and beech. Two large Scotch pines are shown by black dots.

1. *Stable.*
2. *Cowshed.*
3. *Six Pig Styes.*
4. *Cart Shed.*
5. *Duck Pen.*
6. *Hen House.*
7. *Dairy.*

by the joint efforts of two or three rabbits as they burrowed into the sandy soil with their front paws and kicked out the loose earth with their hind legs. Each large hole may be the opening to more than one burrow, leading in different directions, though cross passages may enable the owners to communicate.

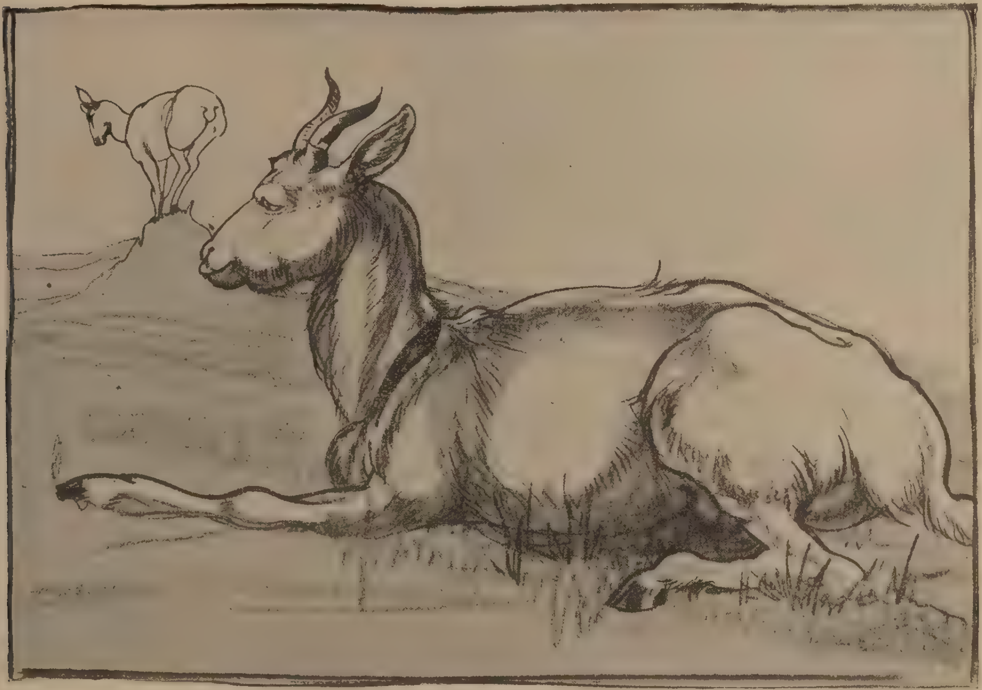


FIG. 20

Goats

The Rabbit's Nursery

These burrows are not the places where the baby rabbits were reared. Before their birth, their mother went some distance away and scooped out a special nursery burrow, lining the nest at the end with fur pulled from her own breast. For a little while after their birth, the mother did not leave her young, but when she cautiously left the burrow to find food, she closed up the entrance with the same kind of materials as were lying about—earth, sticks, some dry leaves—so that it was quite impossible for anyone else to know where the young were hid. Even their own father was not let into the secret. Each night she returned to feed them and stay with them until dawn.

At the end of about a fortnight, she considered the babies grown enough to be introduced to other members of the colony, and led them away from the secret burrow back to her own home. Here, doubtless, the mother and babies were welcomed with great pleasure, for rabbits are amongst the most affectionate creatures towards one another, and enjoy being together.

How scrupulously clean the mother rabbit keeps her young! At first she licks them over, and as the fur grows, encourages them to lick it and keep faces and paws speckless. No one ever sees a dirty rabbit in a warren.

For food, there is grass and plenty of young gorse shoots, that are soon nibbled short; looking at the gorse bushes we can see just how high a rabbit can reach up to feed, for the shoots are nibbled all round up to a certain level; but higher than this line the shoots are long. Not far away, at the bottom of the hill, the farmer sowed a turnip field, and the rabbits had joyous times at night, feeding on the young leaves. So many did they take, that the crop was endangered until a fence of wire netting along the hedge kept out a good many, though some soon learned to burrow underneath.

When the little rabbits go out with their mother to find food, she often leads them through patches of dark undergrowth, where their grey coats make them look like shadows among shadows, and as night comes on, and the mother's outline becomes indistinct, the little ones can still follow on account of the white on her tail.

The Farmer's Goats (Fig 20)

Near the rabbits, on the hillside, the farmer has tethered his goats. There are three nannies, each with two kids, while the billy goat is some distance away. One has a greyish coat of short hair, but the others are far more handsome in long-haired coats of various shades of brown, grey, and fawn; and on their heads they carry a pair of horns curving back over their shoulders.

When a strange person or dog passes near, each mother calls her kids, and stands between them and the unknown. Should the stranger attempt to come near, nanny lowers her head ready to butt, and if, by circling, he tries to reach the kids, he always finds the watchful mother on guard. When anyone known approaches, the goats come as far as their tethers will allow, bleat, and show pleasure in being noticed.

Kids, like lambs, are the most playful little things, having a variety of games such as racing, follow-my-leader, standing on hillocks, while their friends try to butt them off; and here is one standing with four feet on a hummock no larger than the top of a loaf of bread. Suddenly its body gives a twist, and pivoting on its hind legs with front legs held high, it darts with a hop, skip, and jump to its twin, and both dash off to mother for a drink of milk.

Watching these kids at play, it is easy to realize that the real home of goats is in the mountains; their agile bodies, long muscular legs, and dainty cloven hoofs, seem just made for springing from rock to rock.

During summer, goats stay out all night, but morning and evening are taken to the farm to be milked and watered. In winter they stay in the shed at night.

What Goats Eat

The hillside provides them with the variety of food on which they thrive best—grass, leafy branches of oak, willow, and beech scrub, gorse and tufts of dry-looking plants, while the thick stems of bushes show where the bark has been gnawed. Nothing in the vegetable line comes amiss; hence goats have to be tethered, or they would soon do an immense amount of damage.

Following the path up the hill to the wood we pass the billy goat, a splendid though fierce-looking creature, with a long beard of which he seems quite proud, for he tosses his head about, bleats, and puts himself into various attitudes, as though to compel admiration.

In the Wood are Squirrels

Soon after entering the wood, the quick movement of some little animal catches our eye; but nothing is visible. Soon, however, a small head with large pointed ears and very bright eyes peeps at us from the far side of a tree trunk, and evidently deeming there is nothing to fear from people who move so silently and do not appear to notice him, he becomes bolder, comes round the tree, and out on to a branch some distance ahead. He is to be seen plainly now—a little red brown squirrel with light breast and handsome bushy tail. (Fig. 21.)

His drey, or summer home, is in a pine tree some distance up, where a large branch joins the trunk and most people would imagine it to be a rather large bird's nest made of sticks and lined with leaves and moss.

In June four babies were born, and when they were strong enough, their parents led them out on to a branch and taught them how to walk, run, and leap from bough to bough. Now, on the ground below the tree, where there is a cleared space, what games they all have, joining with another family living close by—"follow-my-leader," up and down trees, across branch bridges, leaping wide spaces and using their tales as balancing poles when they make the daring leaps. On the ground they play flat racing and "leap frog."

They are a jolly noisy party in the evening as they chatter and play, and when they feel hungry the wood supplies them with a variety of foods. There are pine cones, and you can always tell when a squirrel has eaten them, for the wooden bracts are gnawed off, except for a few at the top, the seeds eaten, and the central core thrown down. Or there are soft leaves, and the inner bark of young branches; sometimes a few bird's eggs, or even a nestling or a mouse to vary the menu.

The Squirrels' Winter Home

Further on in the wood is an old tree with a hole in its trunk. This is the winter home of the squirrel family, and when heaps of moss and leaves are put in for bedding, and the bushy tail tucked snugly round each neck, what warmer or more cosy place could be desired?

Before winter sets in, the whole family collects nuts and acorns, and stores them in various holes, never all in one place, lest it should be discovered and the store robbed. Also the squirrel knows that, in winter, it has enemies such as the fox, dog, and weasel, and by going constantly to one place it might leave too strong a scent to advertise its whereabouts.

In the spring, after the grey brown winter coats have been shed, and the new red brown summer coats are at their best, the young

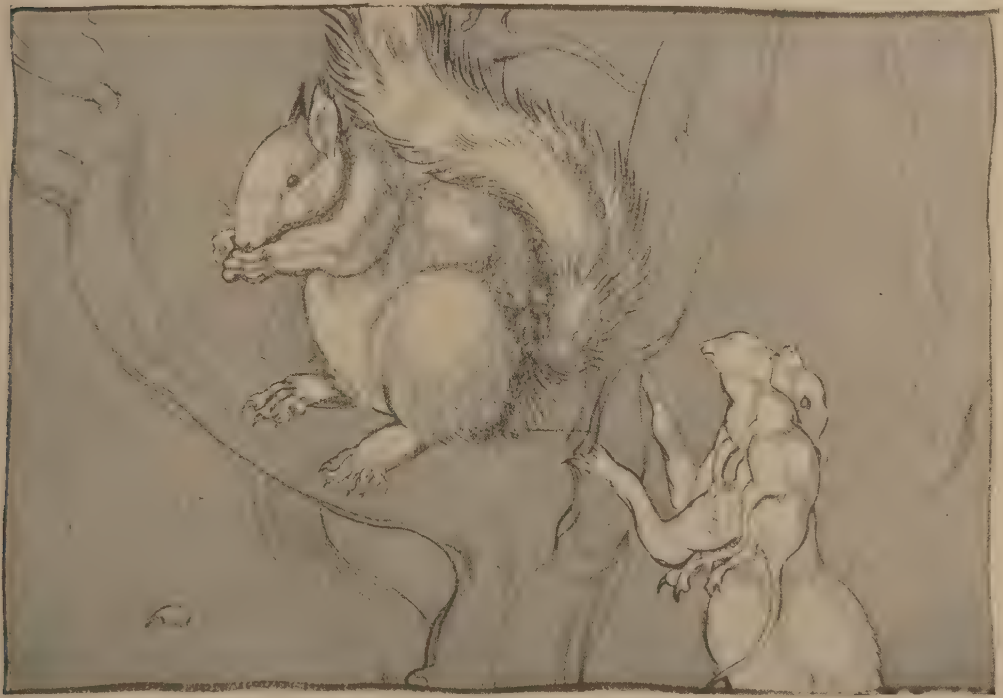


FIG. 21

Squirrels and their Young

squirrels leave their parents and set off to find mates for themselves and begin housekeeping in the same delightful way, while the father and mother move to their summer home and bring up a new family. (Fig. 21.)

Park Squirrels

London children can see a good deal of squirrel life in the various parks, where the imported grey American squirrels have almost driven out our red squirrels. But these have similar ways, except that they bury their winter nuts in separate holes in the ground. They are so tame that they will take nuts from visitors and either put them in their cheek pouches, or sit up on their hind legs to eat them, holding the food daintily in their hands, when the long chisel teeth and cleft lips, similar to those of rabbits, can be easily seen.

Foxes (Fig. 22)

There is a pair of foxes living in a hole on the hillside, which give the farmer much trouble. At nightfall they go to hunt food for their hungry cubs, who like nothing better than a fat chicken or young rabbit. These foxes are somewhat dog-like in appearance, with red brown coats, bushy tails, very large ears, and sharp pointed muzzles. They can dig under a wire net, and few fences can keep them out. If there is a loose board to the hen house, they are sure to find it, or they will overturn a coop to get at the sitting hen. On moonlit nights their sharp dog-like bark can be heard as they call to one another.

Though comparatively few children in the country actually see foxes, most know how carefully their parents secure the hen-houses and duck-pens at night.

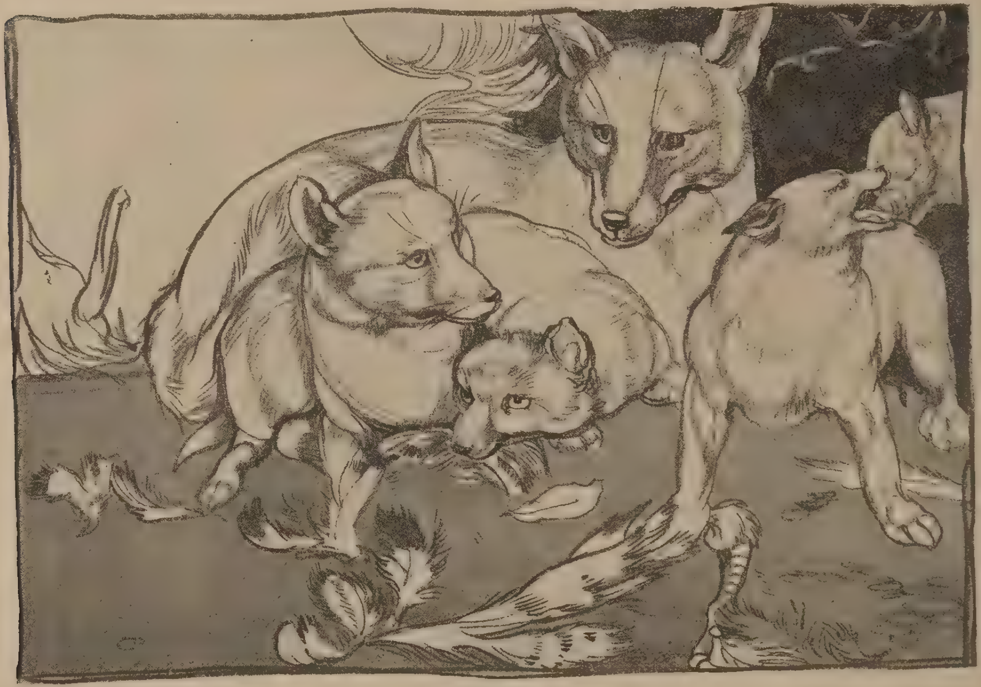


FIG. 22

Vixen and Cubs

Cows

In the Pond Pasture the farmer has turned out his cows, for they are thirsty creatures, and love to stand up to their knees in water during the warm part of the day, flicking off the troublesome flies with the whisk at the end of their tails. (Fig. 23.)

The teacher in country schools should give the children certain questions to answer from observation, and the remarks should be talked over and amplified; or a visit should be paid to the cows in field or shed. Examples of such questions are: At what times of the day do cows chiefly feed? When do they sit down? What do they do when they sit down? Look at their throats, can you see any movement? How does a cow move its jaws? How does it bite off grass? Look at a horse grazing, does it bite off grass in the same way? How does a cow get up from the ground? How does it sit down? Does a horse get up differently? if so, how? How many ways do you know in which a cow makes its wants known?

In Days Long Ago

Tell of the times long ago, when in forested Europe cattle liked to graze in damp pastures and swamps. Their heads, carried low, were just right for peering under trees, and their cloven hoofs were splendidly adapted for walking in boggy places. Now, a horse cannot walk as easily in mud, for its single hoof acts as a sucker, while the cloven hoof of a cow divides, lets in air, and draws easily from even deep mud.

In days long ago, in various parts of the world, cattle had many enemies such as the wolf, panther, and tiger. Fortunately, most of these slept during the day, so cattle developed the habit of collecting a quantity of grass early in the day, filling a special bag in their bodies,

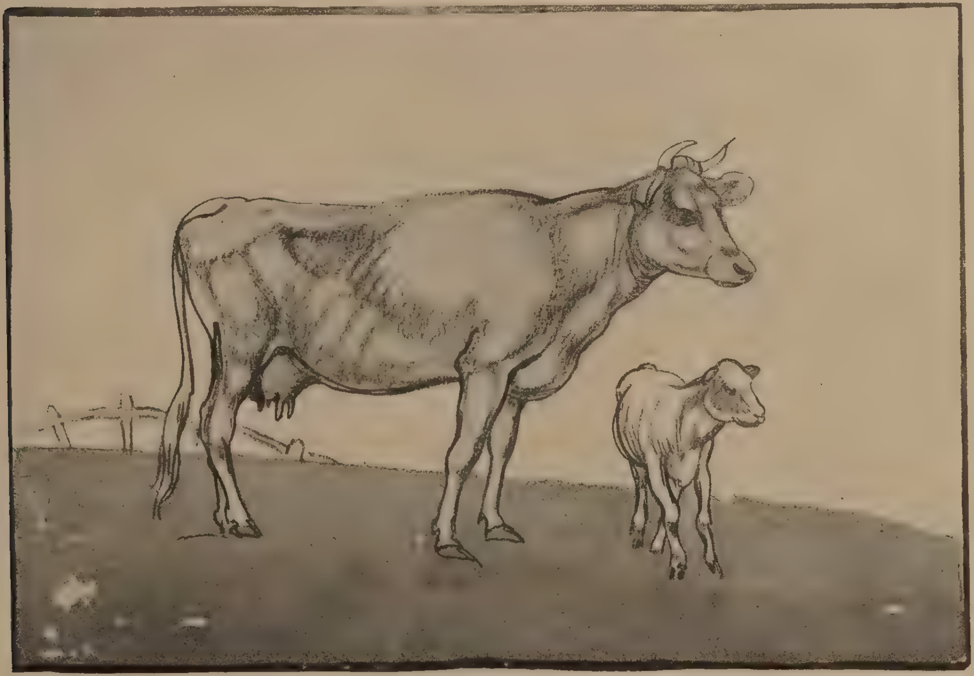


FIG. 23

Cow and her Calf

and then, seeking a quiet spot well hidden among the trees, would sit down and gulp up a little of the collected food and chew it thoroughly with their large grinding teeth. We call this chewing the cud, and our cows still carry on the old habit, of which the children can see a good deal when they watch a ruminating cow.

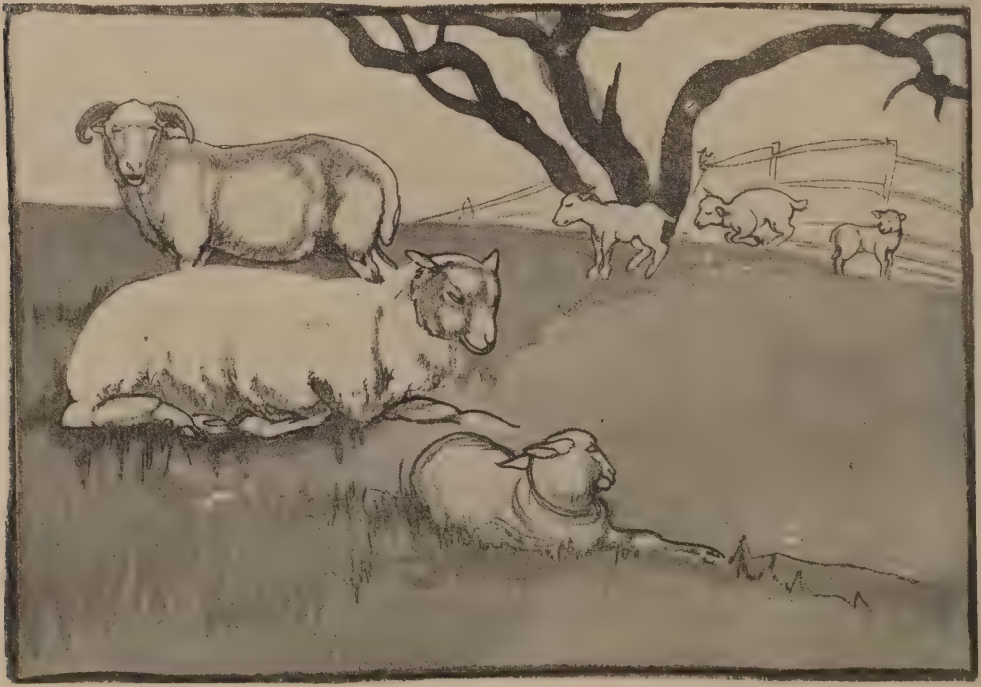


FIG. 24

Sheep and Lambs

Through the cow pasture we come to a field where turnips are being lifted for market. The tops, and some of the roots, are left for the sheep, which are hurdled into a part so that they can clear it thoroughly, after which the farmer will move on the hurdles.

The Farmer's Sheep (Fig. 24)

In some ways sheep remind us of cows, for they have similar cloven feet, and we may see many sitting down chewing the cud. But while cows are animals of damp places, sheep like the dry hills and mountains, and in many countries are to be found not far from the snow. The reason they have such warm woolly coats is that these are a protection from the keen mountain air, especially at night.

During the summer the thick winter coat is shed, and children can collect, especially from gaps in hedges, or from barbed wire, tufts of raw wool that can be utilized in the handwork lessons. Because this wool gives us our most valuable clothing, farmers wash and clip the wool every summer.

What the Sheep Eat

Like cows, they are purely vegetarian animals, and tear off grass by pressing it with the lower front teeth against a pad of gristle in the upper jaw. Neither cows, nor sheep, have upper incisor teeth.

Sheep have a wonderful instinct for following one another, and should one animal stray through a gap, others will do the same. If the leader jumps over some obstacle in a path, all the sheep will follow suit ; if a leader can be induced to jump over a stick in a gap, all will jump at the spot, even if the stick is withdrawn. Such examples are often quoted in illustration of the stupidity of sheep, whereas such habits show their wisdom, also their mountain origin.

In the mountains there are often precipices and narrow ledges, where only the leader can see and choose the way ; the rest must follow exactly where she leads, if they would reach safety ; hence the habit of undeviating obedience to the leader is deeply rooted in sheep nature.

Lambs play the same games as kids, showing thereby something of their ancient home ; while, if sheep are lost in a snowstorm, the shepherd does not look for them in valleys, but goes to the highest land he knows in the district.

The Farm Horses

By the side of the house lies the meadow into which the farm horses are turned, when carting is finished for the day. They have been given a good feed of oats, a drink, and a wash down, for the day in the hay field has been very hot, and the stableman knows how to take good care of the animals that are man's best helpers.

They roll on the cool grass and begin to eat as though it were the most important business of life. Their manner of biting off grass is very different from that of the cow or sheep. The large front teeth in upper and lower jaws are set at such an angle that they make a perfect pair of nippers to cut off grass just above its roots. No cow could do this, and it is said that a horse will thrive in a field where a cow would starve.

Long ago horses came to us from the dry grasslands of Eastern Europe and mid-Asia, where in summer it was hard to get a good feed. Horses learned then to bite down to the very roots, and gradually the teeth became adjusted to form the excellent tools they are to-day.

Looking round this field, we are struck by the difference in size of the animals present ; here are the great cart horses with huge barrel-shaped bodies, powerful chests, and heavy oblong heads ; then there is the farmer's riding horse, with slim body and legs, small neat hoofs, and pointed head ever on the alert for unfamiliar sights and sounds, a nervy beautiful creature that needs much humouring and understanding. She has very long pasterns and walks as though she moves on springs, very different from the cart horses whose walk is so heavy. There is also a Shetland pony, so small that it could almost be stabled under the kitchen table !

Talks about Horses

What problems can the teacher set for the direction of children's observation ? Here are a few out of the many : How does a horse show pleasure ? anger ? affection ? fear ? How does it sit down ? get up ? Does a resting horse chew the cud ? If you take a dog into a field where there are several horses, how do these act ? How does a horse show that it is listening ? What difference is there between the cows' and horses' tails ? What movements does a horse make with its mouth when eating ? Name all the things you know that horses like to eat. Are there any of these that a cow does not eat ? (corn). Does a cow eat any food that a horse does not ? (linseed and oil cake not given to horses).

Tell of the sociability of horses, their affection for stable companions, and willingness to make friends even with other animals, such as cats and dogs ; of their wonderful intelligence in being able to find the way when once they have been over the ground ; of their cat-like power of being able to see almost in the dark.

The Town Horse

Town children can make a good many similar observations as to colour, size, use of various kinds of horses. They will be familiar with the powerful van horses, whose heavy tread splashes the people on wet days ; with the riding horses in the parks ; with the ponies that draw light vans and costers carts. They can learn a good deal about the sharpness of senses by watching the movements of ears and nostrils, the quickness to see and avoid people, vehicles, etc. But of the social and play life they will see very little, for alas, the hard work on increasingly difficult roads tires horses so much, and there is no green grass to keep them on the alert for an occasional bite, so that we are most familiar with dull, tired, overworked beasts forced to lead an unnatural life, and showing little of the quiet pleasure and contentment of the country horses turned out to grass.

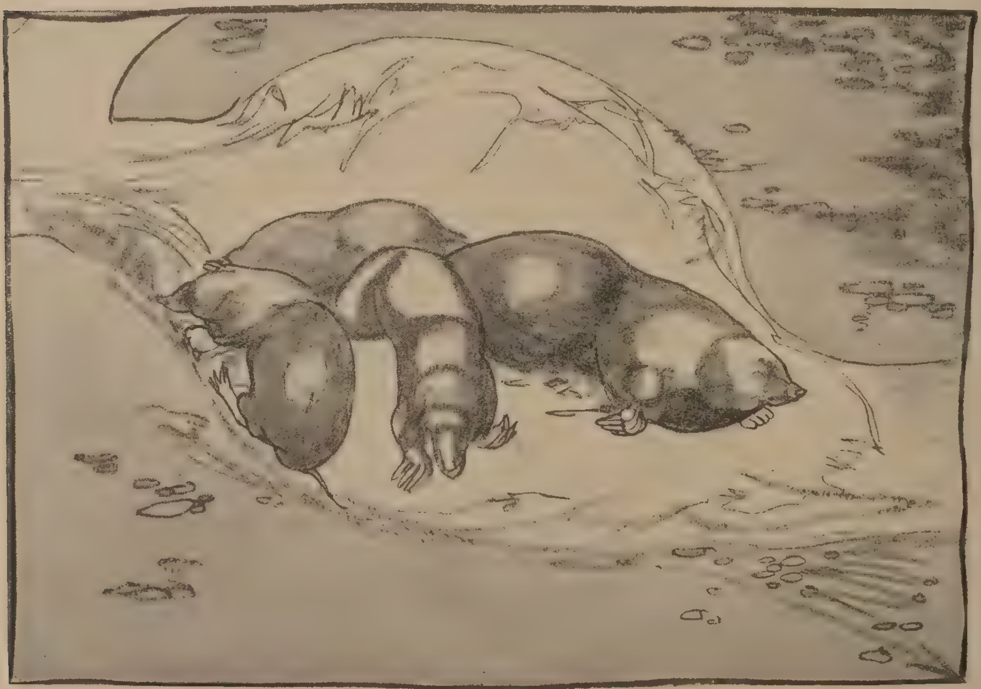


FIG. 25

Moles Underground

The Mole Hills

In a corner of the horse pasture, heaps of fine earth show where the moles have been busy at work, tunnelling underground for worms and grubs. These are not their real homes, but merely heaps of debris thrown up in the course of excavation. The true home is in a much more secret place, in some bank, or under the root of a tree. Moles sometimes come above ground at night, but they are mining animals, nearly blind, working their way through the soil by shovelling it aside with their broad hands and long nails. (*See* Fig. 25.)

The Greedy Field Mice (Fig. 26)

Near the moles, in a bank of the hedge, lives a colony of short-tailed field mice, one of the pests of a farmer's life. This mouse is rather like his cousin who lives in our houses, but has a stumpy tail and almost invisible ears. He has a large appetite and collects enormous stores of clover, grass, and turnip seeds, also potatoes. Sometimes he takes up his lodging in a disused mole's nest, and uses the galleries as storehouses. Breeding freely, a colony is soon formed, and the amount of damage done to crops by these little creatures makes them the despair of the farmer.

In the Hen-house

We cannot leave the animals of field and farm without a visit to the most familiar, the fowls, ducks, and pigeons. In the orchard is a row of coops, where the sitting hens, and hens with families of from ten to fourteen chicks, are comfortably housed. In this coop, with its little pen before it, a hen sits on day-old chicks, tiny balls of fluff that need warmth and no food, and must not be disturbed. In the next are week-old chicks, able to run in and out between the bars; they are hungry mites, and are ready for a meal every two hours. Further on is a coop we must pass quietly, because after three weeks of patient waiting, a hen is watching over eggs that are hatching out.

Each tiny bird within the egg has a knob on the end of its beak, like a little hammer, and with this it breaks its way through the shell and nestles amid the warm feathers of its mother. (*See* Fig. 27.)

Mrs. Hen and Family

In the farmyard is the hen-house, where for fear of foxes the fowls are shut up at night; also because hens do like to wander and make nests in bare dusty patches under hedges, and sometimes even in beds of nettles where they cannot be seen. There is a little family in the yard, just brought in by a hen who had strayed

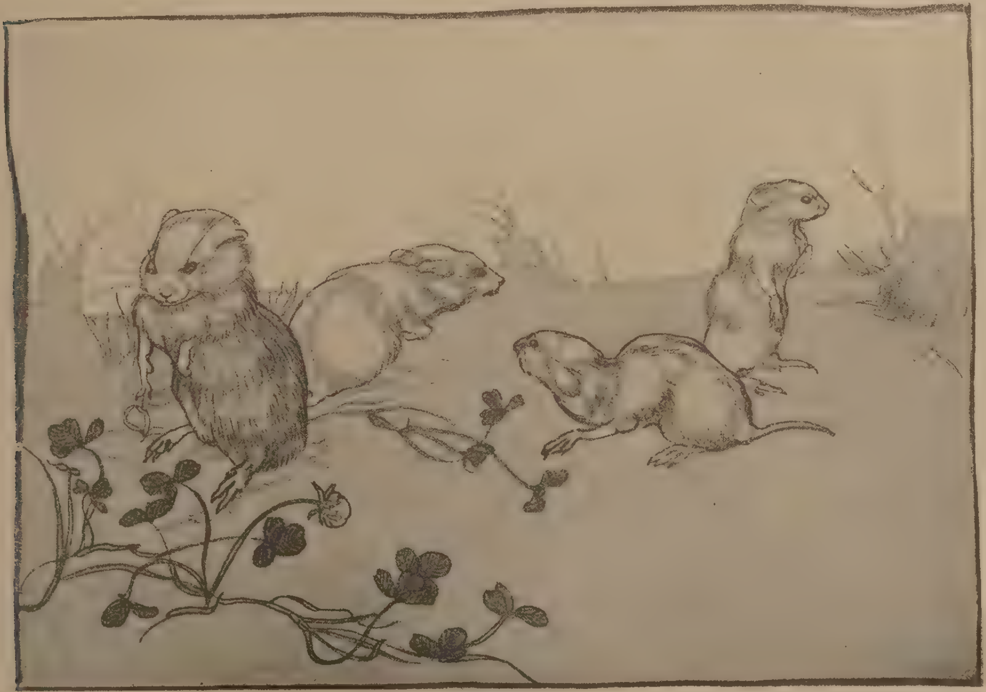


FIG. 26

Short-tailed Field Mice or Voles

away. As she walks proudly along, clucking, the chicks follow; she picks up a worm and breaks it in pieces which she tosses to the chicks; or she scratches up grubs and odd bits of food, pointing them out, and leaving the little ones to pick them up.

And look at this fine cock, with plumage shining in the sun. He is immensely proud of his splendid tail, his scarlet comb and wattles, and his long spurs. Though he looks so arrogant, he is really very unselfish, and spends much of his day, from the time he announces dawn with strident crow, in scratching up food and calling to the hens to come and take it. The farmer says that in spring this cock thinks so much for the hens that he hardly eats anything himself, therefore he has to be caught and penned in with a good meal, which he must eat himself, since he cannot give it away.

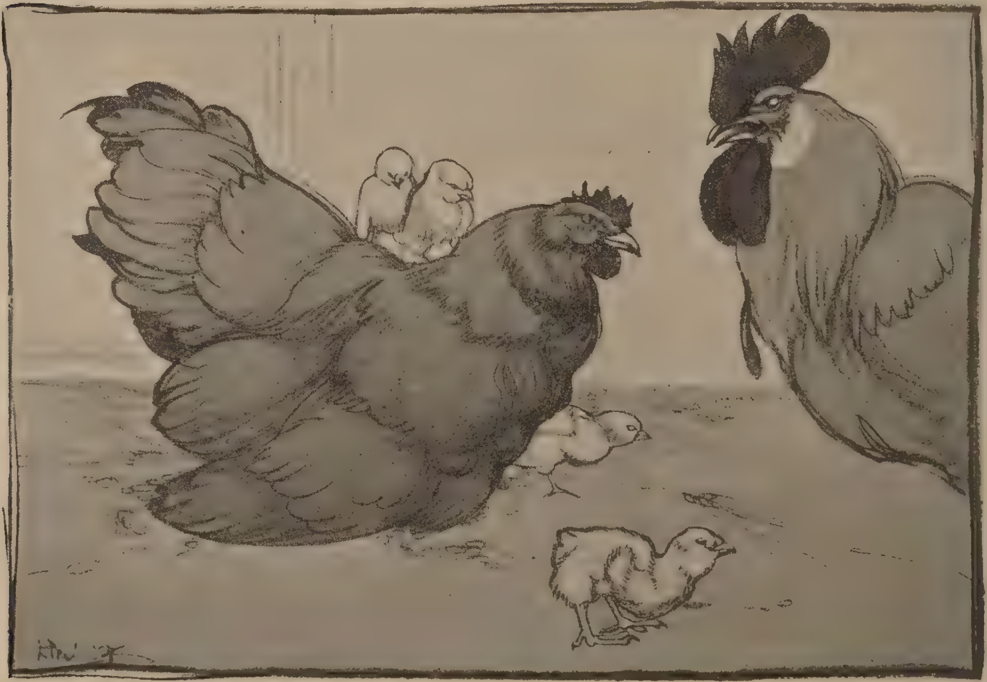


FIG. 27

Chickens

The Pigeons (*Fig.* 28)

Morning and evening, when the fowls are fed, the whirring of wings announces the arrival of pigeons from their cote on the side of the barn. At this time of the year they also are busy with little ones, and we can see bits of stick and grass protrude from the holes in the pigeon-house. When the two baby pigeons hatch out, they are naked and helpless, and are fed on "pigeon's milk," which is a thick curd-like fluid consisting of partially digested food the parent bird has swallowed, and which is regurgitated from the crop.

In feeding, the nestling puts its beak deep down into its parent's mouth, and drinks. Pigeons are the only birds that feed their young this way. Children should watch hens and pigeons drink; while the hen lifts up its head and lets the water trickle down its throat, the pigeon drinks continuously like a dog or horse.

The Ducks

Out from the yard waddles a string of ducks, quacking as they walk, one behind the other, towards the pond. Their legs are placed so far back under their bodies that on land they look very awkward, but in water the webbed feet are in the best position for paddling with the least amount of effort. They float lightly on the water, never getting their skins wet, for they keep their feathers well oiled.

From time to time we can see a duck put its head beneath the tail where there is a large oil gland, and run its beak up a feather, also it pecks at little oil glands in the skin to break them, so that the fluid runs down to lubricate the feathers. Even in cold weather ducks do

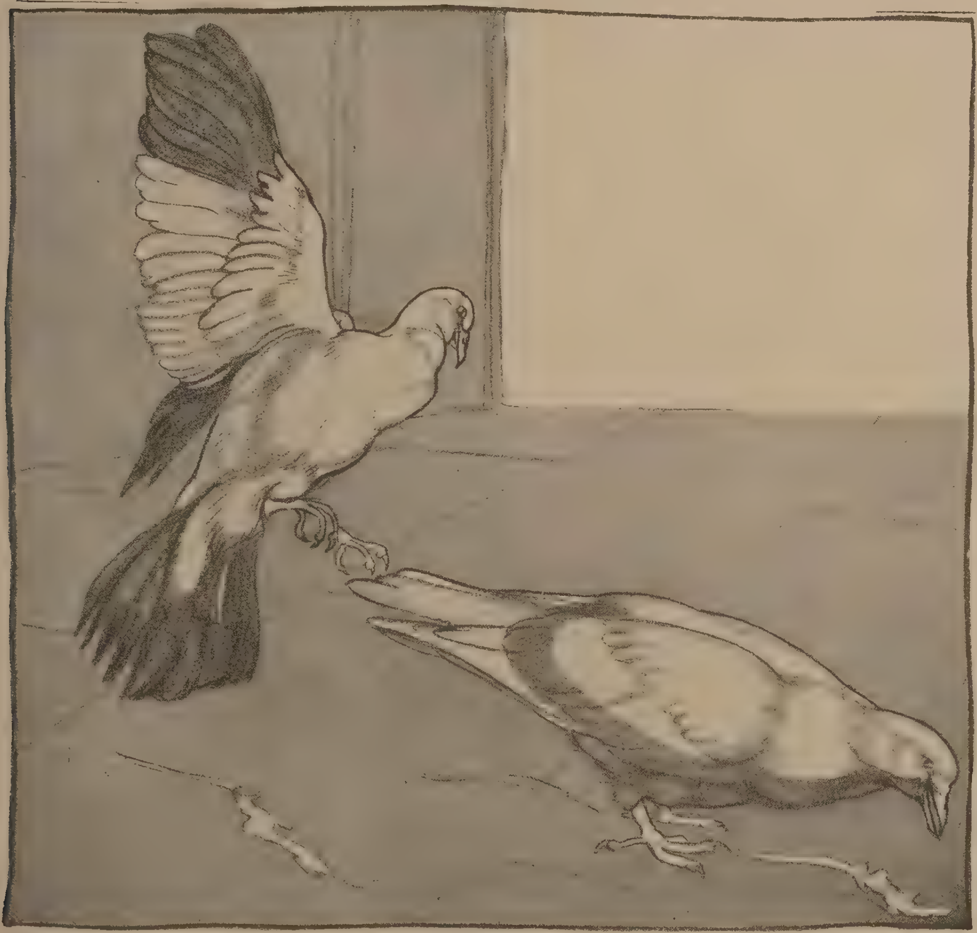


FIG. 28

Pigeons

not get chilled in the water, because under the water-proofed outer covering, there is a warm suit of down feathers. (Fig. 29.)

Suddenly a duck turns upside down. Its neck is just long enough to reach the mud, where the sensitive beak can feel living creatures. Taking a mouthful of mud and water, the duck presses with its tongue and strains out the water through a horny fringe on the upper mandible, and swallows the living residue. Other ducks go to the sides of the pond and nip off pieces of weed with the tip of the beak.

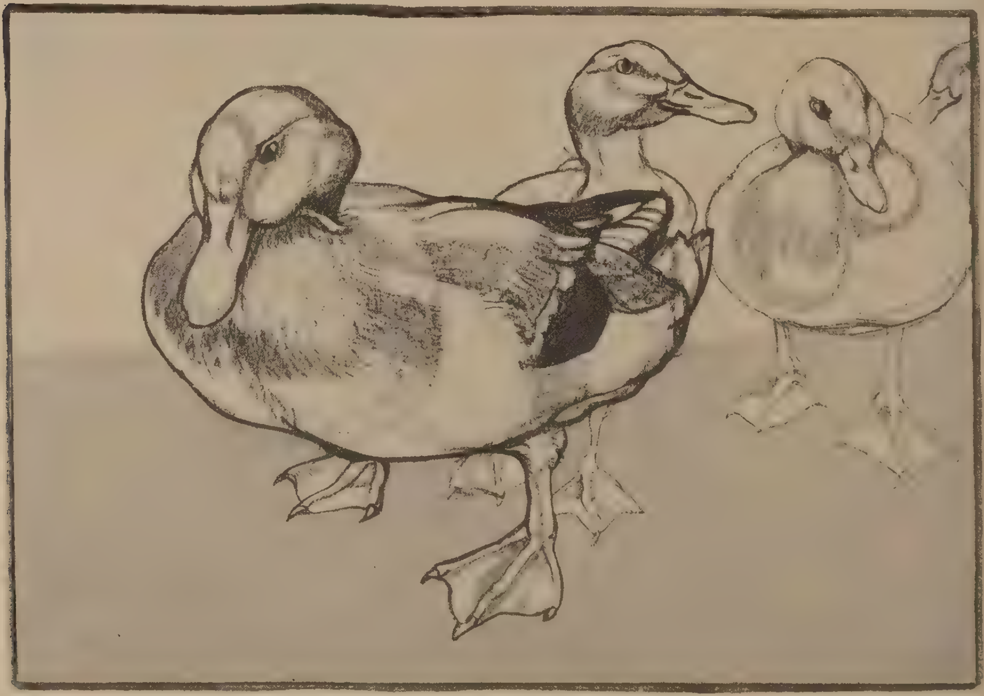


FIG. 29

Ducks

The Duck's Nest

On the further side of the pond is a bank where water voles have their holes, and at the foot in a clump of rushes a duck is sitting on a clutch of fourteen eggs. She will have a long wait of a month before the ducklings hatch out. She is a good mother till the first children break out and make an attempt to get to the water. Then, unable to forego the pleasure of looking after them, she leaves her nest with the rest of the eggs. For this reason farmers often put ducks' eggs under a hen, who apparently does not know the difference between three weeks and a month, but will sit till the last duckling is out.

Ducklings are most active little creatures; having been longer in the egg than chicks, they are more precocious. At a very early age they like to make their way to the edge of a pond, where they are quite at home in the shallow water.

SOME ANIMALS OF OTHER LANDS

In connection with talks on how people live in other countries, what they do, and what they see, some mention must be made of those animals that are man's helpers; also of some he hunts for food, or to provide him with tents and clothes.

Among so large a number it is very hard to select, but perhaps the most interesting to young children are the elephant, camel, giraffe, reindeer, wolf, tiger, lion, and seal.

The Elephant (Fig. 30)

The home of the elephant is in the forested parts of India and the Malay Peninsula, and also in tropical Africa, where the dense forests shade these great creatures from the sun. At evening they seek the more open spaces near to water, where they bathe by standing in the river or pool, filling their trunks with water which they squirt over any part not immersed. They are splendid swimmers, and do not mind how deep is the river they have to cross, for even if they sink over their heads, they can shut their eyes and hold their trunks above water so that they can breathe quite well. They do not like going a day without bathing, for it keeps them cool and helps them to get rid of the flies, which are so great a torment.

They need a great deal of food to nourish their huge bodies; nothing in the vegetable world comes amiss, but the leaves of the cocoanut palm, growing rice, young branches of any tree—in Africa, especially the mimosa—are enjoyed. Often trees are uprooted so that they can eat the sappy roots.

The Elephant's Trunk

The trunk is not merely a nose, but a sort of hand which twists round a branch and tears it off. The end has a finger-like process of an exceedingly flexible nature, with which it can lift from the ground, by pressing it against the opposite process, the tiniest object. It is with the trunk that the elephant gathers food and puts it into its mouth. It is with the trunk that it can suck up water to a certain height and empty it into the mouth; and when flies are very troublesome, it is the trunk, again, that tears off a branch, trims it to shape, and uses it as a fly whisk.

He has to use the trunk for everything on the ground, or high up, because his neck is so short that he can neither lower it nor turn it from side to side.

How They Travel

When feeding, elephants post sentinels so that they cannot be surprised, and they make a great deal of noise calling and trumpeting to one another; but when they like, no animal can move more silently through the forest. They travel about in parties of thirty to forty, led by an old "tusker" to whom all yield unquestioning obedience; they can make their way through dense forest, where no other animal can go, by trampling down their own road.

One of the heaviest goes first and stamps down bushes and undergrowth; coming to a tree trunk, he leans his forehead against it, and presses with all his strength until it bends or breaks. If he cannot manage it alone, one of his companions helps, for elephants are truly social animals, and know how to co-operate. All members of the herd follow, trampling as they go, and when they have passed, a track has been made which other creatures can use on their hunting expeditions.

Male elephants have tusks that are really two teeth, the only ones they have in the front of the jaw, but at the back are one, or perhaps two, enormous grinders that are renewed about six times in the long life of over a hundred years.

Baby Elephants

Baby elephants at birth are only three feet high. If scared by anything strange, they run under their mother's huge bodies, where they feel quite safe. When they take a drink of milk, they tuck up their little trunks and suck with their mouths just like any other baby animal. It takes twenty-five years for an elephant to grow up, and each two years it has another brother or sister, so that by the time it is ready to find a mate for itself it is one of quite a large family of all sizes.

Men catch elephants by driving them into a kheddah, or enclosure, formed from heavy tree trunks and cross beams. Then tame elephants, called decoys, are driven in and help their masters to rope the wild creatures and tie them by the legs to great tree trunks. The

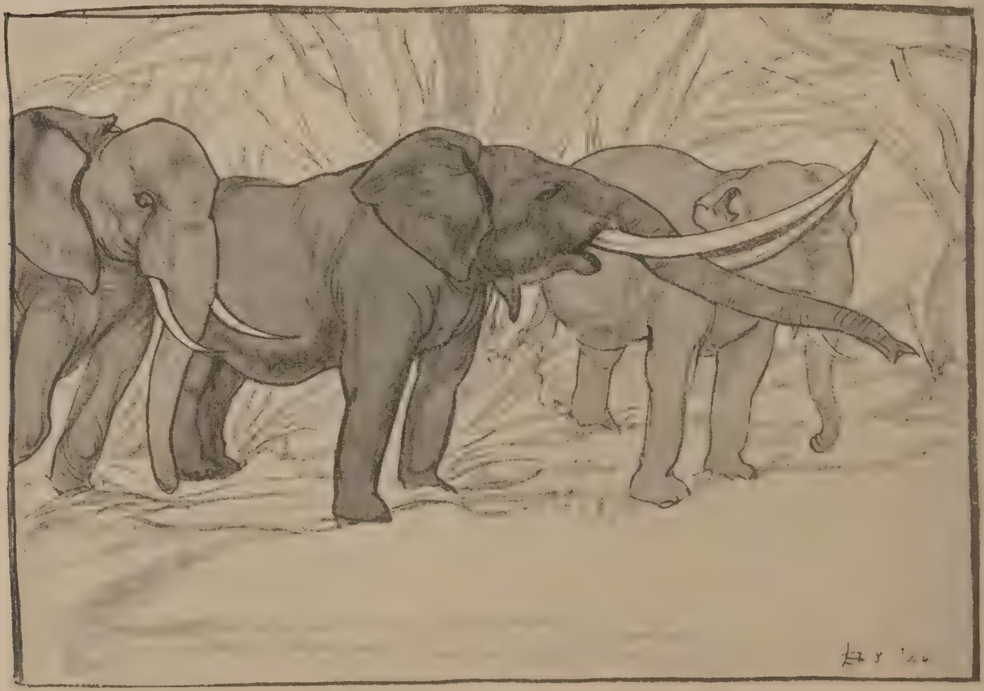


FIG. 30

Elephants

tame elephants enjoy the fun, and are very quick to see how best to help. The captured beasts are treated kindly, given plenty of cocoanut leaves and things they like best to eat, and every evening are escorted by two tame elephants to water. At the end of four months the wild creatures are quite tame, and are willing to learn how to work. They pile timber, clear new coffee plantations of trees and undergrowth, help to make roads, draw heavy loads; and best of all, they like pushing logs ashore from rafts, because it means working in the water they love.

The Giraffe (Fig. 31)

Outside the forest in Africa lives the giraffe, the tallest—and one of the strangest—animals in the world. He likes to roam over grasslands, where there are clumps of thorny acacia trees on which he feeds, gathering the leaves with his flexible lips and ribbon-like tongue. To reach the top boughs, he has a marvellously long neck with an upright mane like a donkey's, and on the head are two short horns covered with skin, which are certainly not very good defensive weapons.

This large, gentle creature would be the easy prey of lions but for its long straggly legs that can cover the ground at great speed; also the giraffe knows well how to dodge and elude enemies. It travels about with a small company of friends and relatives, and as these creatures have large far-sighted eyes, one or other of the

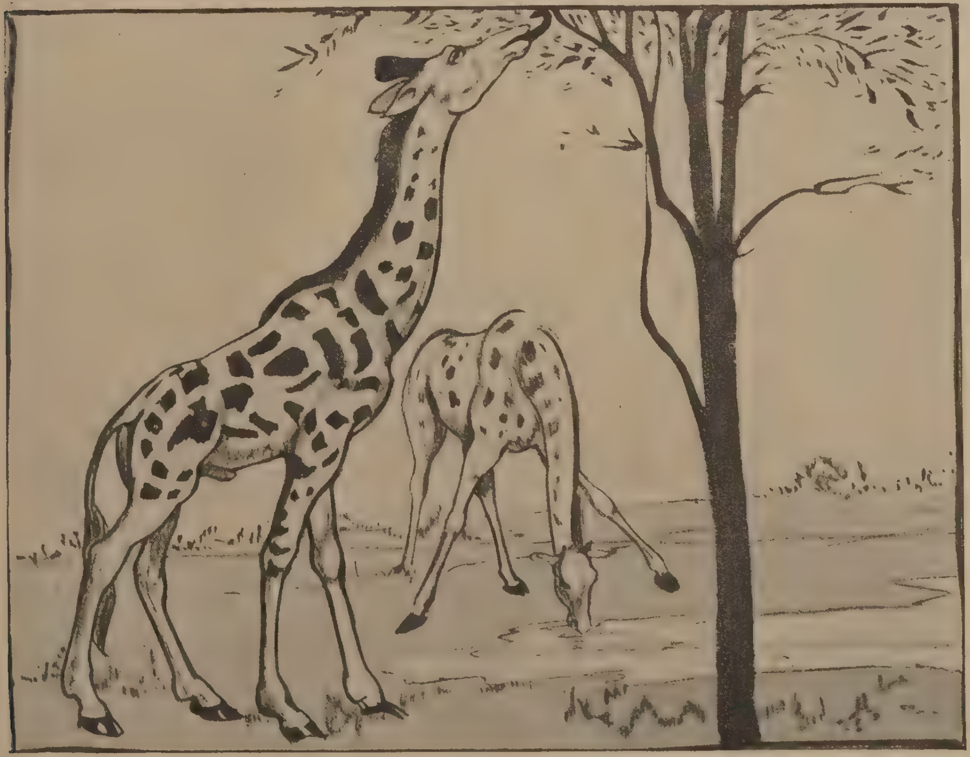


FIG. 31
Giraffes

group is sure to become aware of, and give warning of, danger.

Why They Have Spots

As they stand among the trees, their colouring is protective, for the curious large dark spots, separated by a network of fawn coloured lines, resemble the shadows cast by leaves when the sun is shining through—so that colour, speed, and excellent eyesight enable these animals to make a good showing in the battle of life. Also, we have omitted another asset, because each muscular leg ends like a cow's, in two hoofs, and can give a terrible kick. Few creatures would dare to come near a mother giraffe with her single baby, for then she does not hesitate to fight for its protection.

Although it is easy for a giraffe to reach the top of a tree, it is difficult for it to eat grass or drink water, and in order to do this it must straddle its front legs, so that it presents a very strange appearance. When it sleeps, it sits down, bends the neck back, and rests its head on its hind quarters.

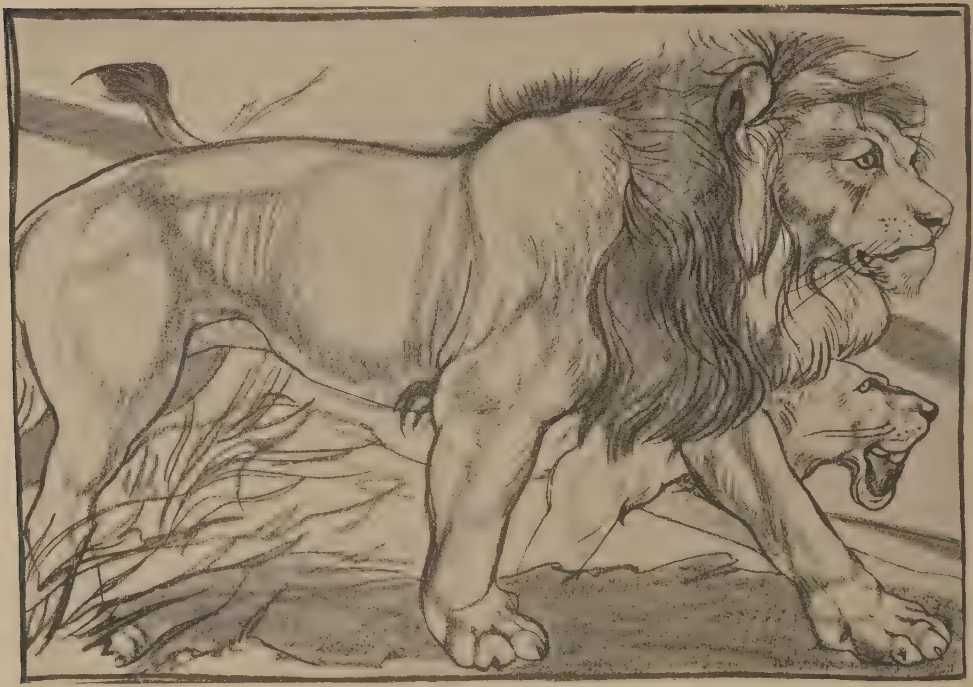


FIG. 32
Lion and Lioness

Lions and Tigers

The lion and the tiger are outstanding figures in the imagination of most children. " As strong as a lion," " As savage as a tiger," are familiar expressions, and when stories of domestic animals seem tame and obvious, those of their relatives, the larger cats, are a perennial source of enjoyment (Fig. 33). Most children at the Zoo would not willingly miss the lion house.

While the home of the tiger is in the tropical jungles and dry ravines of India, where the sun, shining through bamboo stems, casts striped shadows resembling the lines on the tiger's coat, the true home of the lion is the savannas of Africa and Asia. He lives in the same type of country as the giraffe, a land of grasses, thorny acacias, cactus, and other plants that present special features which protect his kind against drought, while enabling them to take advantage of heavy rain.

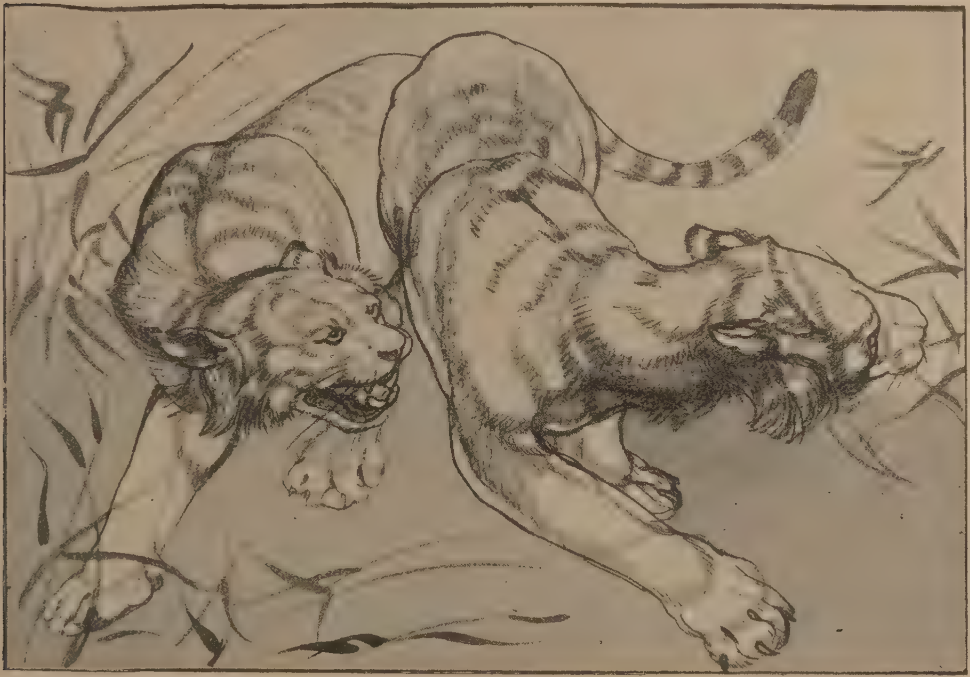


FIG. 33

Tigers

With his lioness (Fig. 32) he makes a den among rocks, scooping out a hollow, or uses some natural cave, and here the two or three cubs are born.

At night he goes out in search of prey and stalks antelopes, the cunning baboon, or even the fierce hyena. Nothing comes amiss, for as the cubs grow they are very hungry and require much meat to satisfy them; it is then that the lioness hunts with him. They hunt at night, for having eyes similar to those of the cat, they do not see so well in bright sunlight.

The Baby Lions

When the cubs are a year old, the lion takes them out to teach them how to hunt, to leap upon their prey, to strike with their paws, but never with their teeth. They hunt, at first, very small game and play with it before tearing it with their sharp teeth, much as a cat plays with a mouse. Lions' teeth are like cats', very small in front, but with four enormous canines that hold the prey and tear the flesh apart; while at the back, instead of grinding surfaces there are sharp points with cutting edges, so that when the two jaws work up and down against one another they cut through flesh like a pair of shears. The tongue is rough and can rasp the flesh from the bone.

As soon as the lion cubs can help get their own food, the father goes away for a time and leads a bachelor existence, hunting alone and roaming greater distances. At the end of three years, the young lions, now resplendent in their thick manes, tawny coats, with voices powerful to send out the terrifying roars, and having nearly come to their full strength, leave the old home and for a few weeks hunt together, till in the spring, when the desire for a mate is felt, they separate. After a young lioness has been found, the suitors may find several lions courting her, and each must go through terrible fights before the winner carries her off for wife. It is at these times that lions find the use of their thick manes in protecting their necks from the teeth of powerful rivals.

When a lion hunts and kills, he is usually followed by jackals and hyenas, who live upon the leavings he so royally bestows. The lion is never mean, and having dined, he is perfectly willing for others to share his kill.

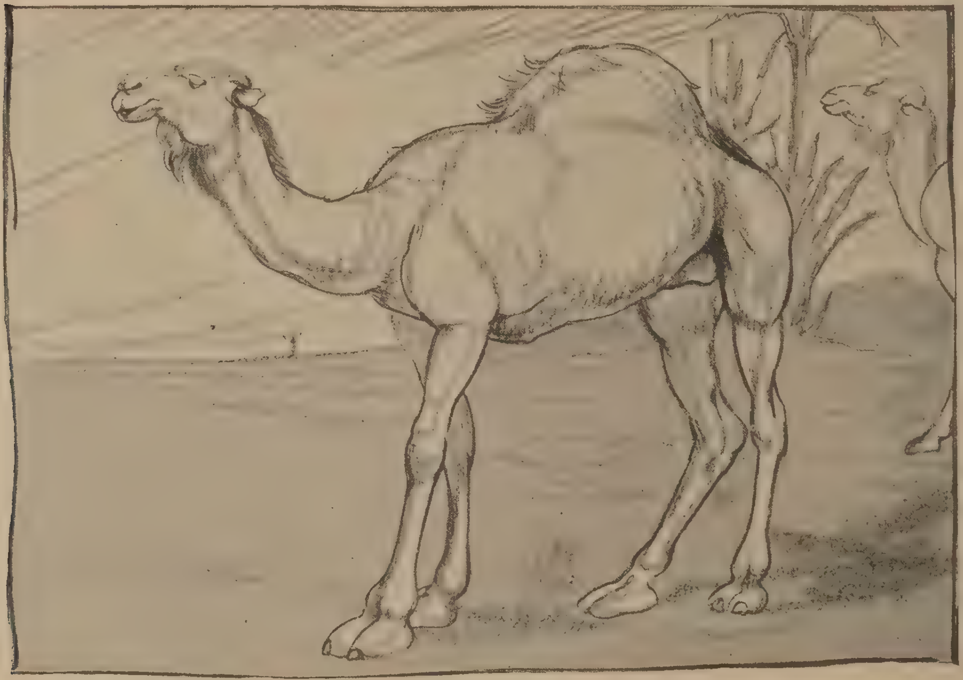


FIG. 34
Camels

The Camel (*Fig.* 34)

We should look in vain for the home of a *wild* camel, for nearly all are now domesticated and are the most useful animals which man in Africa and Asia has managed to dominate. These continents are intersected by vast tracts of burning sand (*see* page 734) where water is only to be found at rare intervals, and where vegetation is extremely sparse. Such tracts would seem to exclude the possibility of intercourse taking place between the countries they separate.

But the camel has made this possible; its great strength, powers of endurance, its ability to go long without water and to live on the scantiest fare, have earned for it the title "Ship of the desert." People such as Bedouins, Tuaregs, Arabs who live on the borders of the desert, where there is a certain amount of scrub and desert plants, rely on their camels for the milk and cheese that form a considerable part of their scanty food.

Sometimes children want to know what is the difference between a camel and a dromedary ; there is practically none, the dromedary is a swift kind of camel, and is to the pack camel what a racehorse is to a draught horse.

The "Racing" Camel

The ordinary camel that makes the long caravan journeys, moves slowly, at anything from 2½ to 9 miles an hour, but there are some camels called *heirie* that are very swift, and will put from three to six days' journey in one. The swiftness of these camels is thus described by the Arabs : "When thou shalt meet a *heirie* and say to the rider, '*Salem aliek*' (Peace be between us !), ere he shall have answered thee, '*Aliek salem*' (There is peace between us), he will be afar off and nearly out of sight ; for the swiftness is like the wind." But it must be said that only the hardy Arab, used to the movements of these racing camels, can endure the violent roll from side to side.

When crossing the desert, camels will go on a few beans, or dates, or some small balls of barley meal a day, with an occasional mouthful of some dry thorny plants. They are the only cud-chewing animals that have kept their front upper teeth and use them as a means of defence instead of horns.

Why He is so Hardy

Now let us see how the camel is specially adapted to the most trying conditions in the world. It carries its head high, with its eyes so protected that glare from the desert does not hurt them ; the long eyelashes, hair in ears and nostrils protect these sensitive parts from the sand particles that blow about.

The two great pads on each hairy foot, ending in nail hoofs, prevent it from sinking in the sand ; and on its back is a great hump of fat, a store of food for bad days. Camels that set off on a long journey, well fed, and with a hard hump, look very different at the end, for they arrive dejected, the hump sagging to one side, with the fat all absorbed.

In the stomach there are some hundreds of little reservoirs of water, which fill when the camel drinks, and are kept filled by a circular muscle round the mouth of each until, in the days when no water can be found, the muscles gradually relax and let out a little water at a time into the stomach, to be absorbed by the blood. Another desert adaptation is its marvellous instinct for water, which it can sense a long way off.

When a camel is to be loaded, it is made to lie down on the hard pads on knees and thighs, and the burdens are strapped on. If the pack seems heavy, the camel sighs and groans, and if too much is put on it refuses to rise.

It is curious that while the camel is so indispensable a helper to man, very few, except perhaps the owners of the swift *heirie*, give it any affection. Perhaps it is the sneery look and sulky temper that repel us.

The Reindeer (Fig. 35)

What the camel is to the people of the hot desert, the *reindeer* is to the Lapps, Ostiaks, and Samoyedes of the cold deserts of Eurasia. It is a somewhat sturdy, heavy looking deer with shorter legs than most of its relatives, and bears on its head handsome branching antlers. It is a remarkable fact that the females, as well as the males, bear these appendages.

In the Tundras these deer make their home, living in large herds and feeding in summer on the rich grass starred with flowers, so reminiscent of Alpine vegetation. At times, if not too far away, they visit the shore for seaweed, and in winter, when the snow covers the ground, they go to the low hills, and scraping away the snow with their strong hoofed front legs, feed on the reindeer moss, a nutritious grey lichen, which they uncover. If the snow is deep, the reindeer dig deeper and deeper until only their tails show above snow, looking at a distance very like rabbits.

How They Help Man

Many of the animals have been domesticated, or partially so, by the Lapps, and other peoples of the Far North; but it takes infinite patience and skill, and they never become quite tame. Some of these people own large herds, and their life is controlled by the seasonal movements of these animals, to whom they owe almost everything. The flesh forms their food, milk is made into rich cheese and butter, the skins provide warm clothing and tent covering, thread is made from the sinews, and even the bones are used for household implements. In winter reindeer draw sledges, and providing the season is very cold, will trot at a good pace—about ten miles an hour.

The greatest trouble the reindeer have to face in winter is from the hungry packs of wolves (Fig. 36) that travel North from the forests, and break up the herds, separate some individuals, and, driving them away from the main body, send them to their death. Against wolves, reindeer have for their protection splendidly strong hoofs and horns, but these are only of use when many deer face the pack; a single reindeer may do a great deal of damage to the wolves, but in the end it is sure to be cut down from behind

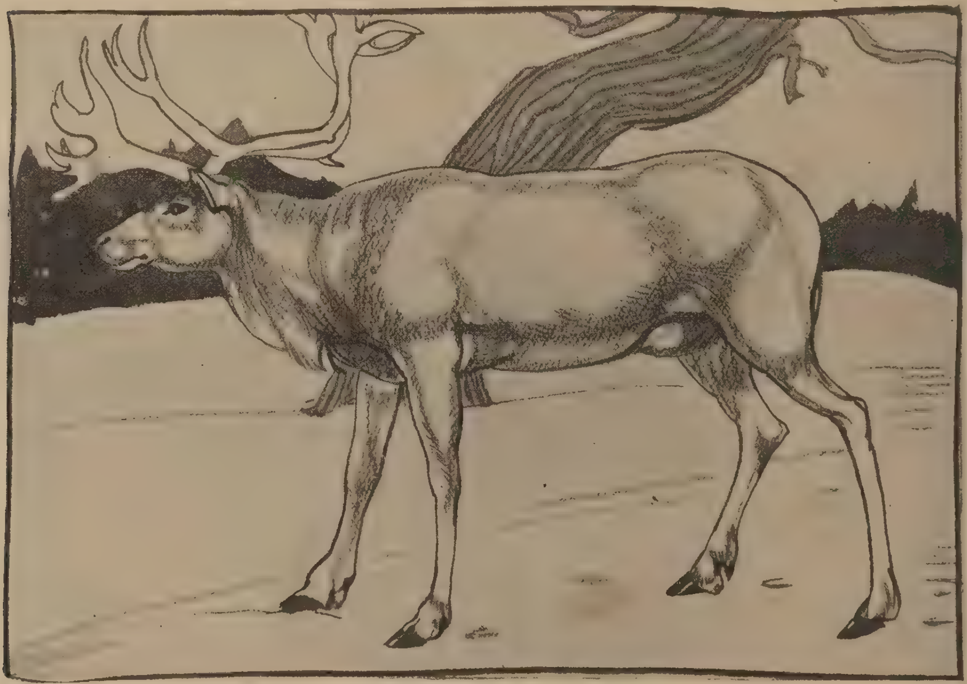


FIG. 35

The Reindeer of the Cold Countries

In summer these lands are tormented by swarms of gnats and the terrible bot fly, and the reindeer suffer greatly; the flies sting ears, eyes, and nostrils, often causing death; hence the herds travel to the tops of hills, or to the coast, if possible, where the cooler breezes discourage the flies. Lapps, themselves tormented by flies, light great fires and feed them with damp grass, so that they give off volumes of smoke, and in this the cattle hold their heads to escape the attacks of their enemies for at least a short time.

The Seals

On the shores of many countries, but especially of cold, live the *seals* (*See* page 799), strange mammals that spend most of their time in the water pursuing fish, but coming to land to sleep and rear their young. They are wonderfully adapted to sea life, having a fish-like body five or six feet long, with legs so modified that they look more like fins. The hind legs stretch far back, enclosing the short tail, and are so placed that, whilst they are of greatest use in swimming, they are of little service on land.

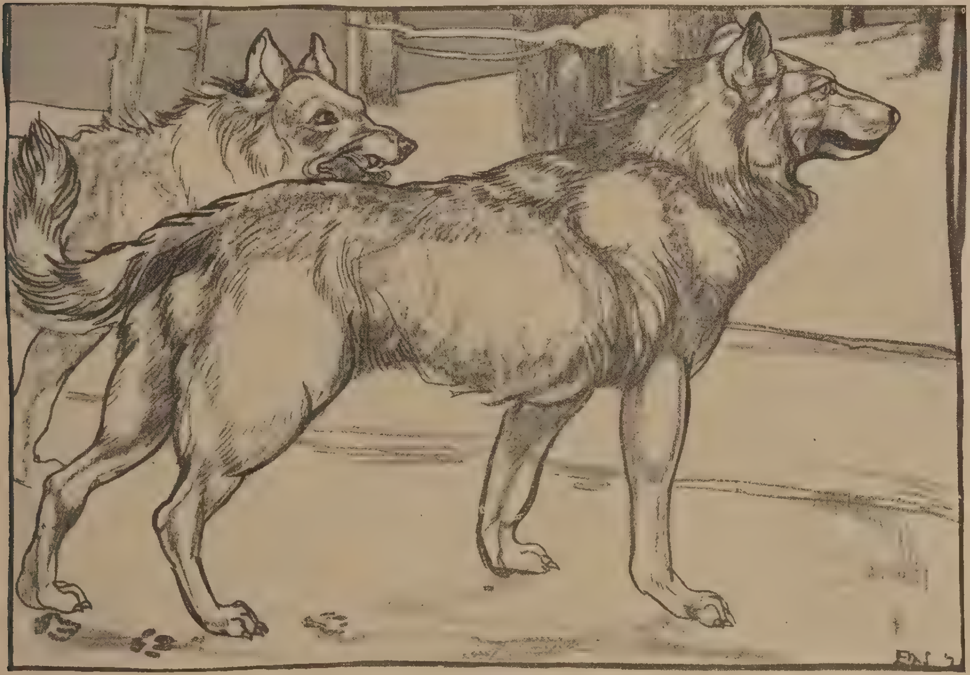


FIG. 36

Wolves

The body is kept warm by a long-haired coat of yellowish grey, spotted black and brown, and an under coat of soft fur, for which the seal is hunted by people from all over the world. A thick layer of blubber gives additional warmth, as well as buoyancy.

Its head is large and round, with sharp-sighted eyes, on which it depends for warning of danger. Having no external ears, hearing is not acute; because of this, the seal has developed the habit of constantly raising its head to look around. On each side of the mouth, and over the eyes, are a few sensitive hairs which act as feelers when hunting in dark waters.

In September, seals make for the shore to find mates, and in June the pups are born—tiny helpless creatures that lie about in the sunshine mewing like kittens, while each devoted mother remains near to anticipate every want of her single child. As soon as the pups are able to take to water, they are shown how to catch fish; and when they are tired they clamber on to their mother's backs for a rest and ride. Sometime before the young are born, the fathers separate from the mothers, and the males and females lead an independent life till once again September comes round.

SUGGESTED WORK IN CONNECTION WITH ANIMAL LIFE IN TOWN AND COUNTRY

INDIVIDUAL models may be made of the various homes man provides for animals, e.g. dog kennel, rabbit hutch, stable, cowshed. (*See* Figs. 37, 38, 39 and 40.)

Take 6 in. square of stiff paper, and fold into 16 squares. Cut along the dark lines (Fig. 37*a*). Fold *B* over *B* (*b*), and bring the two *A's* round across *B* to form the front of kennel (*c*). Paste. When dry, cut out doorway (*d*). The back is to be folded in the same way as the front.

Stable or Cowshed

For a stable or cowshed, use a cardboard box, and with pieces of card divide it into stalls; match boxes, with matches for legs, make excellent mangers (Fig. 38).

A Rabbit Hutch

To make a rabbit hutch, fold and cut a 6 in. square as in Fig. 39. On one of the long sides draw, and cut out bars; draw in a door and cut round three sides so that it opens. Paste *ABCD* on top of one another (Fig. 39*a*) at both ends. Draw and colour, or model, a rabbit to put inside.

Co-operative Model of Farmyard

This is most simply made by giving children, or letting them cut, squares of different sizes from 5 in. to 10 in. Fold and cut each as for the dog kennel, but draw doors and windows to fit the purpose for which each unit is required.

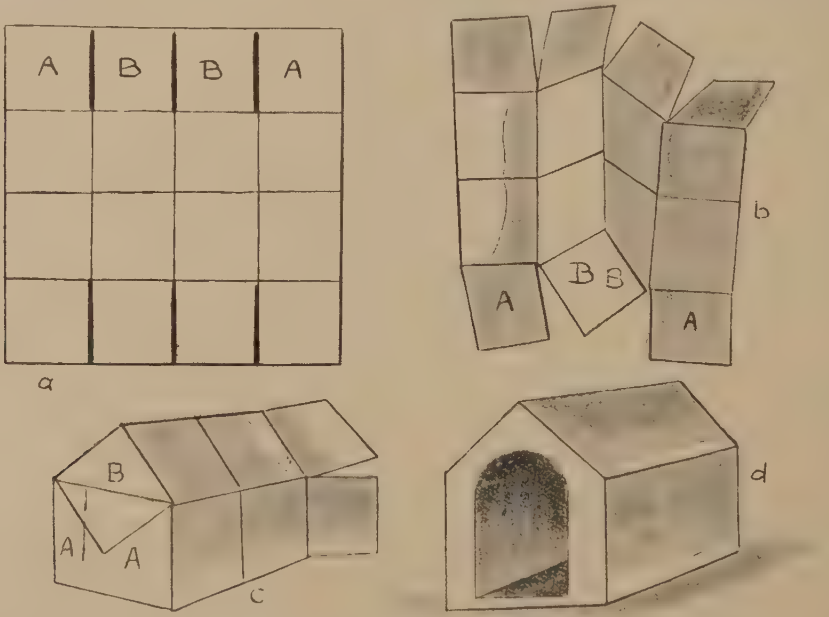


FIG. 37

How to Make a Barn, or a Kennel

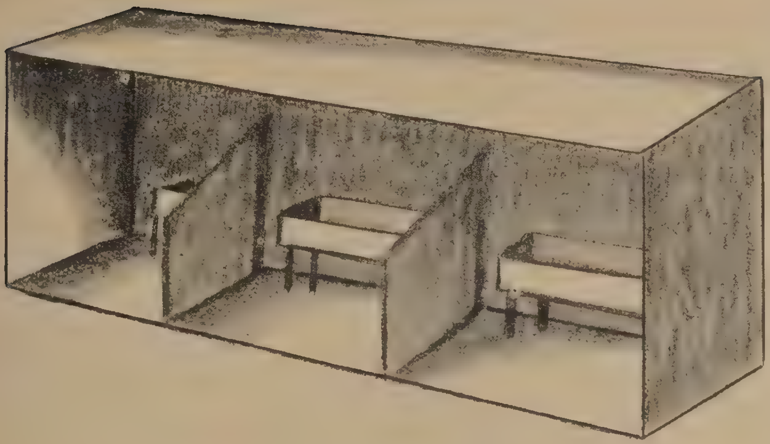


FIG. 38
Construction of a Stable

For suggested arrangement, refer to plan of farmyard, Fig. 19, page 786.

Cut out pictures of groups of goats, cows, lions, camels, elephants, etc., and mount to show family life and activities of each *in its own environment.* (*See* page 726.) The teacher may provide the background, while the children cut out and arrange the animals.

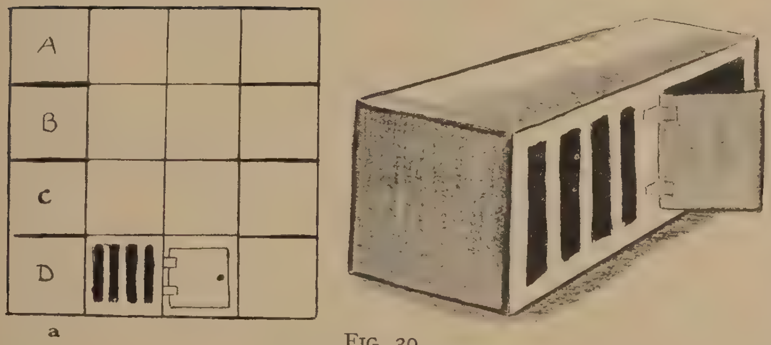


FIG. 39
Constructing a Rabbit Hutch

Animal Books

Make scrap-books of home and pet animals; wild animals of our own country; foreign animals. Collect pictures, children's drawings, descriptions, stories of animal life, "cut outs," photographs, etc.

Encourage children to draw and colour sketches of their own pets at home. Arrange for an exhibition.

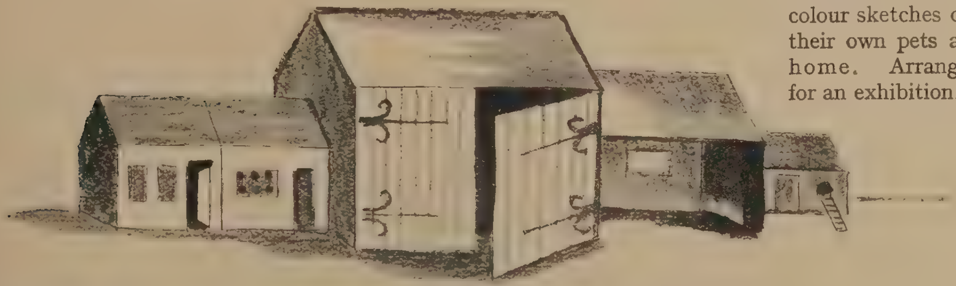
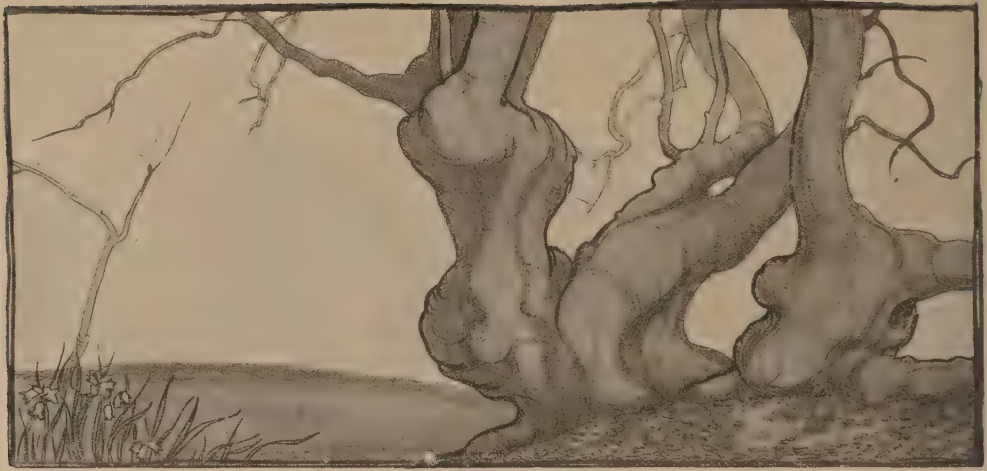


FIG. 40
Examples of Farm Buildings based on Dog Kennel Model. Stables, Barn, Cartshed, Henhouse



OUR TREES AND FLOWERS

HOW SEEDS GROW AND PLANTS LIVE

EARLY spring is the best time to begin a few experiments in the growing of seeds, with the twofold object of giving children some idea of the way their seeds will behave when planted in the garden, or in pots, and of helping them to realize what conditions are necessary for their successful growth.

One should select seeds of which the development follows different methods of growth, and to choose the largest of their type. Probably the best seeds for this purpose will be broad bean, runner bean, or pea ; acorn, almond, or hazel ; sycamore, sunflower, hemp, or cress ; maize, wheat, date, or grass.

How to Plant the Seeds (Fig. 41)

The most satisfactory way of growing these is the following : Put a roll of blotting paper inside a tube lamp-glass and keep it in position with a packing of moss. Stand the tube in a saucer of water and carefully push a few seeds between the glass and blotting paper. Development can be hastened by previously soaking the seeds for twelve hours, during which time note if any of the seed coats wrinkle, and where ?

Two at least of these glasses should be prepared, one to be placed on the window ledge where it can get all the light possible, the other to be put in a dark cupboard. Compare, each day, which seeds " win " the growth race.

Plant others in pots of earth. The children will be able to see from the tubes what is happening. When do the shoots appear above ground ? Are they the same colour as those grown in the tube ? Note eventually which grow best.

Put a few seeds on *dry* wadding in a saucer, and place in the light ; do they grow ? Also put a few on damp flannel, in a tin box with a lid, and keep the lid shut ; see what happens.

Other Experiments

Take two pots of earth, and plant two or three bean seeds in each ; keep the covering earth loose and friable over one set of seeds, and over the other press down a lump of clay or plasticine ; set both in a saucer with a little water and watch daily. In which pot do the seedlings first appear ? What do the shoots do with the clay ?

Plant two pots of seeds early in spring. Put one indoors, and one out-of-doors ; what is the difference in growth ?

Nearly fill a seed-box with soil, and at one end sow a few seeds—e.g. of grass, cress, mustard—and water *only* at the opposite end. When the seedlings have grown, carefully remove a good deal of the top soil and see how the roots travel to the water. Bulbs, too, should be grown in the dark and in the light, and the rate of growth compared. (*See* Fig. 42.)

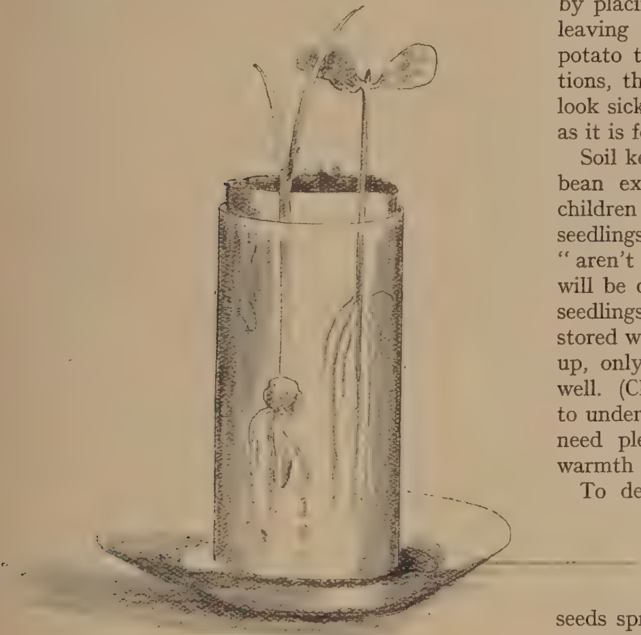


FIG. 41

One of the Best Ways of Growing Seedlings

The Needs of Plants

From such experiments, children will be able to gain some idea of the needs of plants, namely, water (the dry seeds did not germinate); air (those in the tin box could not develop); light—it is true that at first darkness hastens growth, but if seedlings are kept too long in the dark, they do not turn green and eventually die.

The effect of light can be made more clear by placing a board on grass out-of-doors, and leaving it for some days, and by growing a potato tuber in the dark. Under these conditions, though growth goes on, the plants soon look sickly. Sunlight is as necessary for plants as it is for human beings.

Soil kept friable helps growth, but the broad bean experiment was interesting in showing children the enormous pressure exerted by seedlings in their growth; the usual remark is "aren't they strong?" Another observation will be on the importance of earth; although seedlings grow for a time on water and the food stored within them, yet when this latter is used up, only seedlings planted in earth will grow well. (Children in Infant Schools are too young to understand culture solutions.) Hence plants need plenty of light, good soil, water, and warmth for their healthy development.

To deepen the impression of some of the needs of plants, grow grass seeds on a flat piece of cork floating in a bowl of water; put a bunch of ears of corn in a vase of water, and watch how the seeds sprout and turn green. Though they are not touching the water, it is brought to them up the stems, hence they are really kept damp. Cut thick slices from the tops of carrots and turnips and place in saucers of water, these will soon sprout. Put twigs of the

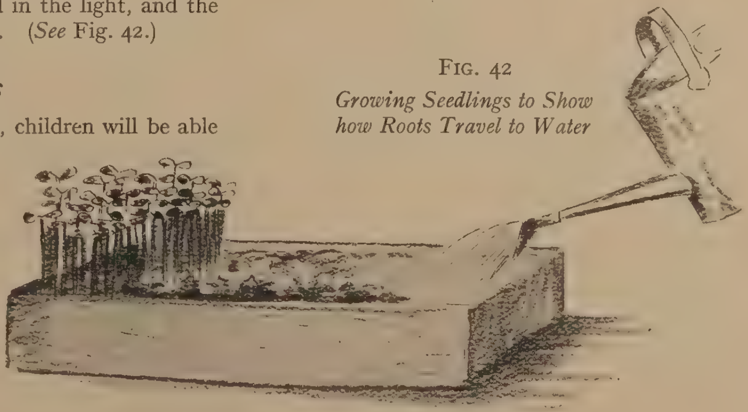


FIG. 42

Growing Seedlings to Show how Roots Travel to Water chestnut tree in a vase of water, spray occasionally with lukewarm water, and place in a warm room; these will open some weeks earlier than their brothers out-of-doors.

Things to Notice

In connection with work on seeds, note such things as—which comes out first, the root-shoot or the stem-shoot? How does the root-shoot come out? Note if it is always near the scar where the seed was joined to its "mother." Which direction does it take? How does the stem-shoot come out? Which way does it travel?

Some seeds have two large seed "leaves" packed with food, so that these look fat and white, and they stay in the ground while the stem-shoot grows up (bean, pea, etc.). Other shoots back out of the seed coats, hump themselves up, and drag their seed leaves above ground, where they open and become the first pair of leaves, different in shape from the rest; between them can always be seen the next green leaves (sycamore, hemp, cress, etc.).

Some seeds carry up their "coats" with them, and in the mustard and cress taken to market, the children can always see these brown "coats" clinging to the seed leaves that have turned green. Other seeds have only one "seed leaf," and send out a sort of foot from which the young plant grows (maize, wheat, date, grass, etc.).

Keeping of Records

Class records, such as the following, should be kept in connection with seed experiments, and plenty of drawings of the development of seedlings should be made; for, although the children are young, the method of scientific observation—that of noticing and recording—should be practised from the beginning. (*See* Fig. 43.)

THE SEEDS WE SOW

Name	When Planted	Where ?	Root Shoot Appears	Stem Shoot Appears	First Green Leaves
Grass . .	2nd Feb.	Cork in water, dark	4th Feb.	6th Feb.	8th Feb.
Broad Bean .	3rd Feb.	Glass tube, light	6th Feb.	12th Feb.	
Pea . . . etc.					

FIG. 43

THE HOME GROWING OF SEEDS AND BULBS

CHILDREN'S GARDENS

THIS class work should be considered only preliminary to the far more interesting and valuable nature-work of letting the children grow their own seeds, and raise their own plants. The daily care and attention that must be given ; the close observation of daily growth ; the protecting love that is lavished by so many children on the living thing in their charge ; and perhaps some dim idea of the wonder of the plant that comes from a tiny dull beginning, makes use of water, soil, air, and sunlight to grow eventually into that thing of magic and loveliness—a flower—must give the children a greater, and more real, love of flowers than the mere nature study lesson, or even the Nature walk. It is through the children's *own* growing of plants that we attempt to form associations which shall lead to a permanent love of flowers.

Preparing for a " Flower Show "

For children in large town schools, a garden is out of the question, but it is possible, by ways best known to the teachers, to provide each child with a pot and some good soil, and let him grow his plant at home. From time to time, these should be brought to school for the teacher's inspection and advice, and at the end of the summer term there should be a " Flower Show," with prizes for the best grown plants.

It is most important that the beginnings should be right ; seeds cannot be expected to grow in dust swept up in backyards, or from the streets ; hence some money should be spent in enough good soil for each child to fill his pot. This soil, a mixture of loam, sand, and leaf mould, ensures that with reasonable care there will be few failures among the little growers.

One of the best nature lessons a teacher can give will be this on the preparation for, and planting of, seeds. It should be given in March or early April. Children should be shown how to put in the crocks at the bottom of the pot ; the necessity for drainage because, although plants like water, they do not like living in a " bath " ; how to put the soil in, little by little, shaking and pressing it gently down until the pot is filled to within half an inch of the brim ; this is for convenience in watering. And, finally, comes the exciting moment of planting the seeds.

Suitable Seeds

For the first year's work we should advise Tom Thumb nasturtiums, two to a pot ; these seeds always grow (Fig. 44), and will stand a good deal of unequal care, also—most important —the plants are profuse bloomers. Next best to nasturtium is Virginia Stock, or Common Marigold (Calendula Orange King), but the Stocks need thinning out, always a painful business for the little grower, and are not so bright. They may well be left to the second school year, when the children may learn the importance of thinning seedlings to allow for fullest growth.

In a class where all children are growing such plants from seeds, there are sure to be some who have neglected this, and such examples will be useful to demonstrate the necessity for drastic treatment. A warning must be given against over-watering, and the teacher would, from day to day, be well advised to bear this in mind ; plants require little water till the pots are full of roots.

Gardens and Flower Boxes

Where school gardens are not possible, the teacher should turn her attention to large boxes standing against the walls in the playground. Very much can be done with these to beautify uninteresting walls, and to provide the best kind of Nature work—that which is the outcome of first-hand observation. Success is fairly sure, even for beginners, if certain conditions are observed. Bore holes in the bottom of the boxes and put in a layer of crocks or stones for drainage. Fill to the brim with *good* soil ; this will sink later to within an inch of the top. Except for bulbs, planting is best done in spring, because the children will not have long to wait for developments, and so run the risk of losing interest.

In these boxes *ampelopsis veitchii*, some rambler roses, such as Dorothy Perkins, Minnehaha, Hiawatha, clematis jackmanni, clematis montana, some ivies, canary creeper, and morning glories can be trained up the walls, and will do well, even in the smoky air of our towns. The first four will grow on a north wall.

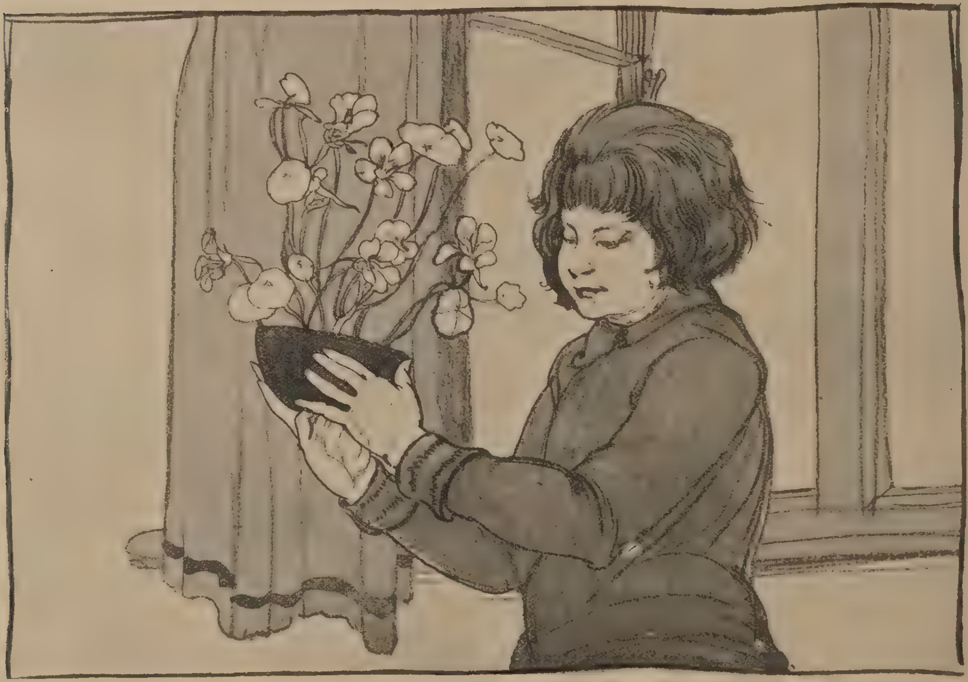


FIG. 44

Nasturtiums Always Grow Well

For front of the boxes, violas, African and French marigolds, London Pride, mignonette (if lime be added to the soil), virginia stock, geranium, godetia, clarkia, petunia would look well, with nasturtiums, creeping jenny, and perhaps a pink ivy-leaf geranium to hang over the edges.

A series of boxes, well tended, will not only brighten the dullest playground, but will attract insects, spiders, and some birds, so that opportunities for fresh observations will be afforded; and where this series of boxes is not possible, there could be a window box, fitted to the outside of each window, where half a dozen plants, with one climber to frame the window, might be accommodated. (Fig. 45.)

Utilizing the Garden Space

The ideal school garden would be one that allows of every child to own a little plot. Unhappily, few large schools can provide this.

Where the ground is very limited, it should be given to the top class, providing the teacher is a garden lover, and the other children should feel they have something to which to look forward when they have climbed so high in the school.

As a preliminary, the garden should have been deeply trenched, and manured or limed; this is essential to success, but is too difficult

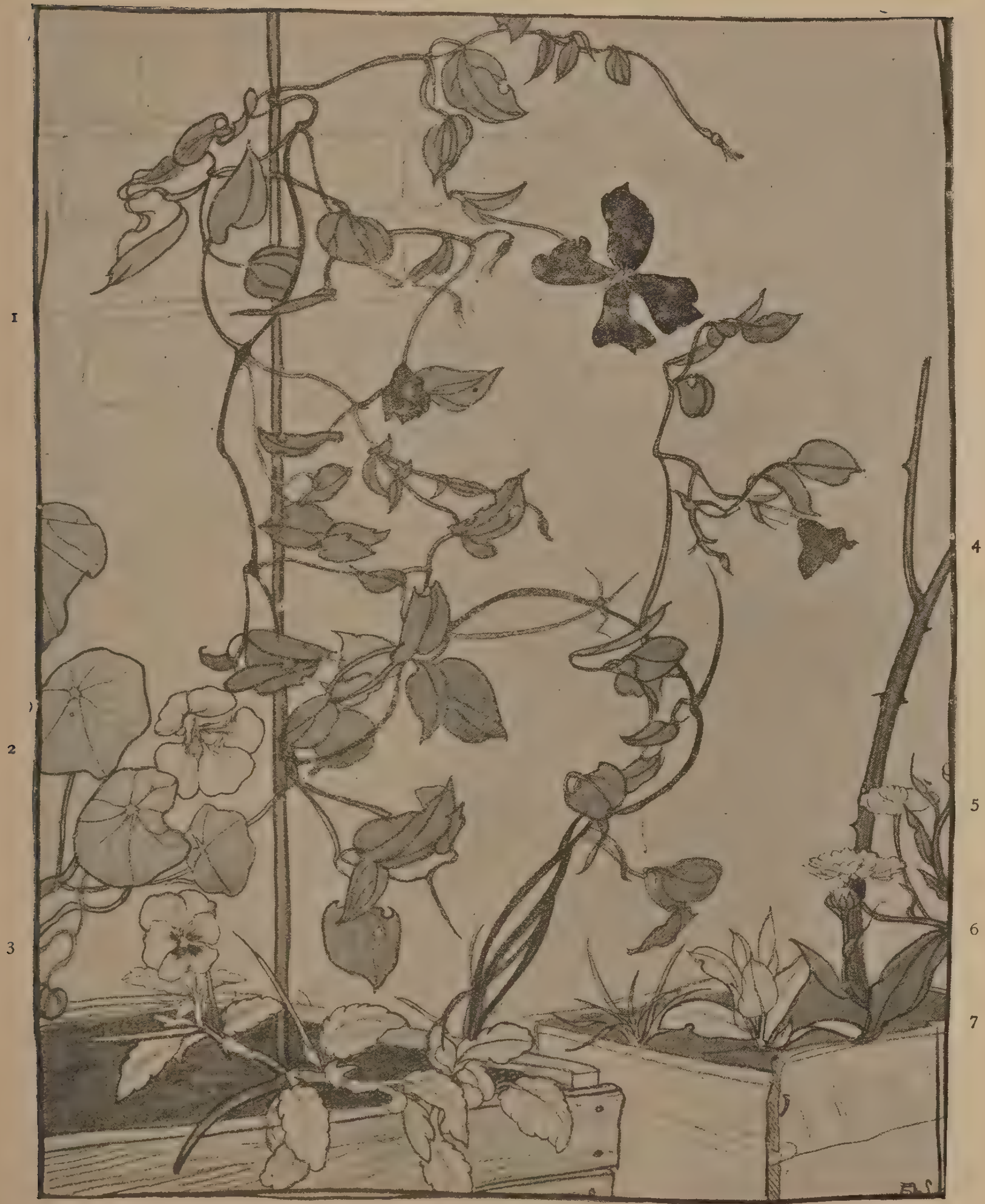


FIG. 45

(1) *Clematis Jackmanni.* (2) *Nasturtium.* (3) *Pansy.* (4) *Rose.* (5) *Marigold.* (6) *Daisy.* (7) *Pink.*

for children in the Infant School. Each class, on taking possession, should have the joy of planning the whole, even to paths; hence for this reason, the previous year's work should be dug up, and the stones, cinders, etc., placed in heaps. Then will come the measuring of the space, and perhaps the drawing of a plan. If the children are too young for plans, they can decide on the spot what they would like to do.

For young children only the hardiest and quickest growing plants should be chosen; but there is a large selection from poppies, nasturtiums, marigolds, virginia stock, candytuft, godetia, clarkia, forget-me-not, pansy, viscaria, blue and red flax, cornflower, coreopsis, scabious for flowers; and scarlet runners, lettuce, radish, shalots, mustard and cress for "vegetables."

Rock Garden and Aquarium

If possible, one part should be given to a small "rock garden," where aubretia, saxifrages, veronica, dianthus, arabis can be grown to make a splendid show of colour early in the year, and fill up the waiting time after bulb flowering till the annuals bloom. A large tub sunk in another part would make a splendid outdoor aquarium, and would provide a home for such plants as duckweed, anacharis, water violet, etc. (Fig. 46.)

Many of the children's fathers are usually glad to spare a few seeds or seedlings from their gardens or allotments; hence a very small sum of money would provide for the additional seeds and plants that the children cannot collect.

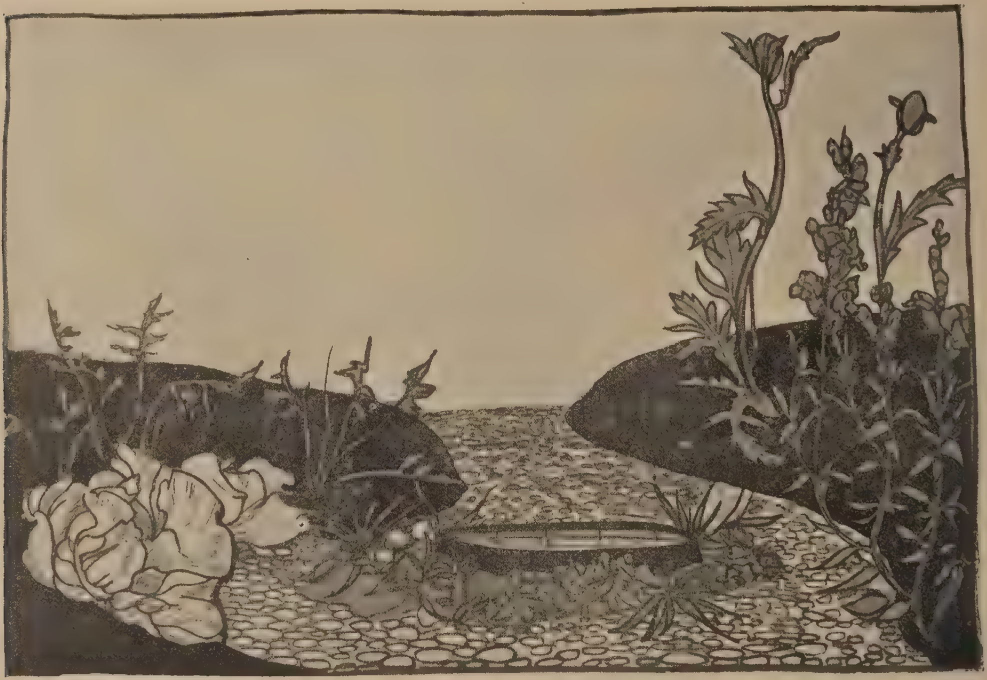


FIG. 46

A Small Bit of a Child's Garden

IN FIELD, HEDGEROW AND WOOD

IN fields, hedgerows and woods, grow wild flowers of very different habit. Meadow land often lies low, and is periodically covered with flood water; it is used for grazing, or is mown for hay. Or it is in upland districts, is windswept and sun-soaked; hence only plants that can survive these treatments can flourish.

Meadow Grasses (*Fig.* 47)

Chief of all meadow plants are the grasses, the legitimate inhabitants. They have many slender thread roots which run into one another till they form a dense mat. For this reason it is very difficult to pull up a grass plant; their true stems run underground. But in early summer, grasses throw up a haulm or stem, that will flower at the top and will support the long ribbon-like leaves that sheathe the stem for at least half their length. See how in the sunshine these leaves curl round, like cigarette papers, to prevent all water drying out.

Most grasses flower in June and July, and if an ear of wheat be first examined, the children will be able to recognize the hanging stamens and the pistils of other grass-flowers. Sometimes they can see clouds of pollen blown about the hayfield, and may be told that before grass plants can have seed children, some of this yellow dust must pass from one to another, hence the gentle summer winds swaying the grass brush the soft heads together, or blow the pollen from plant to plant.

Examples of different grasses should be

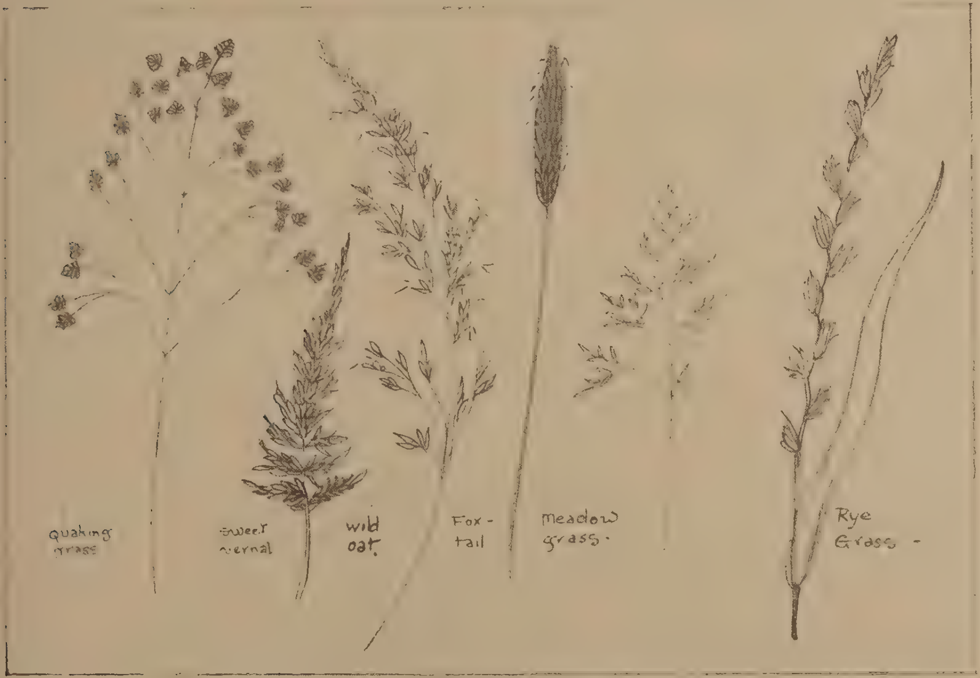


FIG. 47

Various Kinds of Grasses

collected and named, and as these names are rather quaint, there is usually little difficulty in remembering them: cat's tail, foxtail, sweet vernal (which makes the delicious scent of a hayfield); rye, meadow, wild oat, quaking, and many others.

Meadow Flowers (*Low-lying*)

All other plants, in order to exist among grasses, must have slender stems, or be able to push up their leaves, or have finely divided leaves; and above all, they must be perennial—that is, not wholly dependent upon seeds for their continuance, because often meadow plants are cut down before they have had time to make many seeds. (Fig. 48.)

Some of our best-loved meadow plants are dog daisies and buttercups. Try to find the two kinds with reflexed and cup-shaped sepals. Which falls most readily? Which kind grows taller? Which has the more hairy stem? Note the hairs on the under side of the reflexed sepals; they form insect traps to prevent small creatures climbing up and taking the honey which is reserved for other insects. Find the honey scales at the base of the petals. Watch a buttercup plant for a time, and find out what insects visit it. Small creatures get tired of crawling up the buttercup that grows tallest—which one?—and becoming discouraged, climb down.

Then there is the well-named ragged robin, one of the campion family. Look for white and red campions nearer a ditch. Feel the stems, they are sticky enough to catch flies; and while red campion chiefly comes out by day and attracts butterflies, the white campion loves the dusk, and its white scented petals call to the night-loving moths.

Dandelions usually have rosettes of leaves, but in meadows they send them upwards. In damp meadows look for plantain, sorrel, cuckoo flower, cowslip, blue bugle, and the quaint yellow rattle whose roots, being unable to penetrate the felt of grass roots in order to reach water, fasten into these same roots, and make the grass suck up water for it. About hay time, the flowers give place to papery bags wherein we may hear the seeds rattle, hence the name.

Dry Meadow Flowers

On dry meadows and pastures other flowers grow, and if the soil is chalky, we shall be sure to find many a treasure of orchid, such as bee, man, and fly; the bladder campion, bird's-foot trefoil, and the pretty blue scabious.

White and red clovers are plentiful in all meadows, and directly bees have taken honey from a floret, it hangs down to advertise the fact to newcomers, and so save time. Children may often find clover heads with all florets, except one or two, turned down. Note also the leaves that go to sleep with the two lower leaves folded together like a butterfly's wings, and the third drooping over them. In the classroom a clover leaf may be "put to sleep" by covering the plant with a jar.

Flowers of the Cornfield (*Fig.* 49)

The flowers of the neighbouring cornfield are very different, because each year this has to be ploughed, sown, reaped, and ploughed again; hence plants with perennial roots would be unable to grow. The cornfield is the home of large annuals, that grow up quickly, flower, disperse their seeds; after which it does not matter if the farmer cuts short the individual life with the reaper; for the seeds are sown and the continuance of the species ensured. The plough can only bury more or less deeply the precious seeds.

When the meadow lands are past their prime, the corn lands are beginning to be at their best, and we are familiar with the gorgeous scarlet poppy, the blue cornflower, mauve corn-cockle, with its long sepals, the goat's beard, corn marigold, wild pansy or love-in-idleness; the bindweed that, having a feeble stem, makes use of its stalwart corn neighbours and climbs up their stems into the sunshine; the famous scarlet pimpernel which every country child knows can tell if it is going to rain because it does not open on cloudy days; yellow charlock, sow thistle, and many others.

From Other Climes

Nowhere in our country are there such gorgeous wild plants as in the cornfield; one would

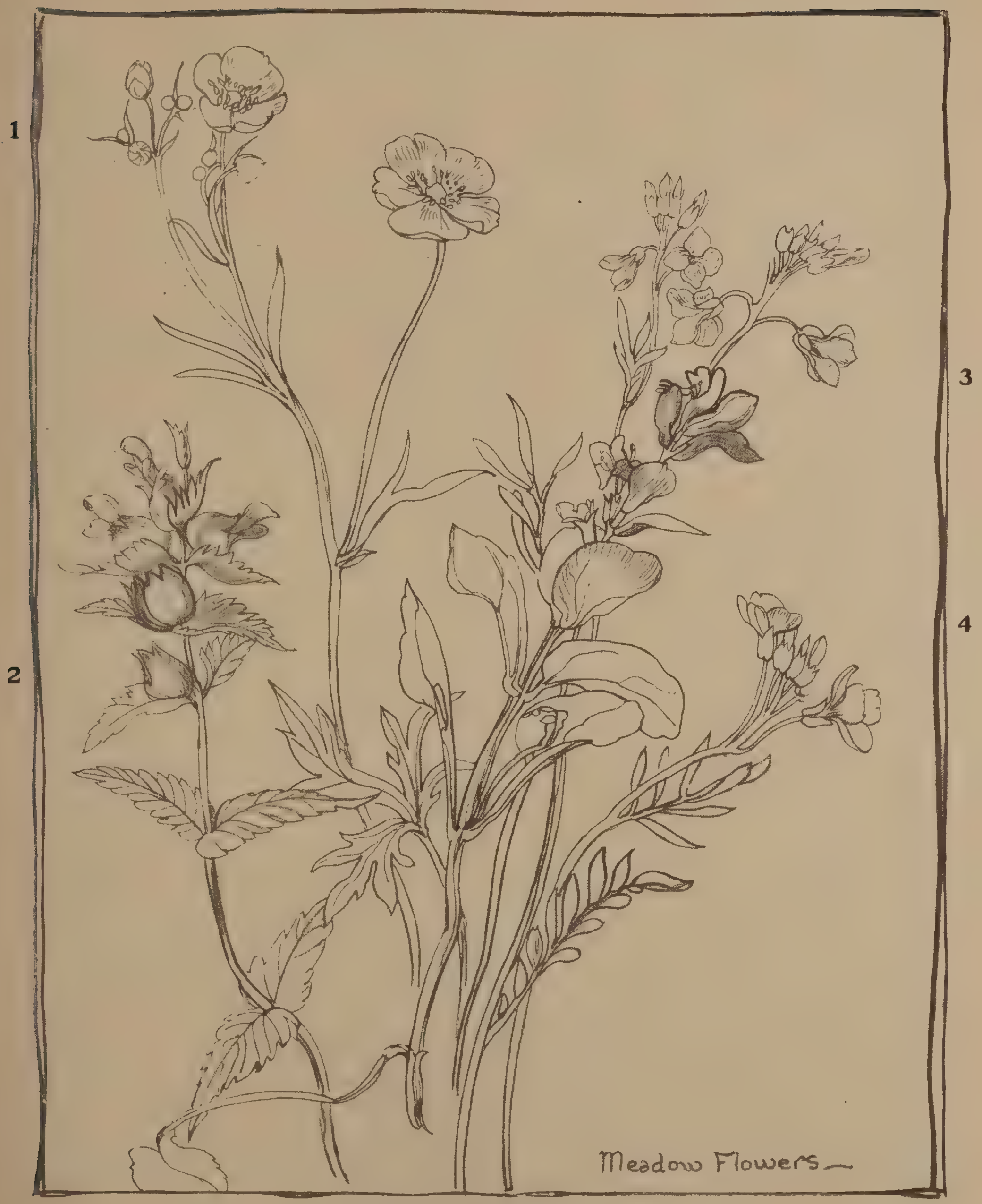

1
2
3
4
Meadow Flowers —

FIG. 48. *Meadow Flowers*

(1) *Buttercup,* (2) *Yellow Rattle,* (3) *Milkmaid or Lady's Smock,* (4) *Bugle*

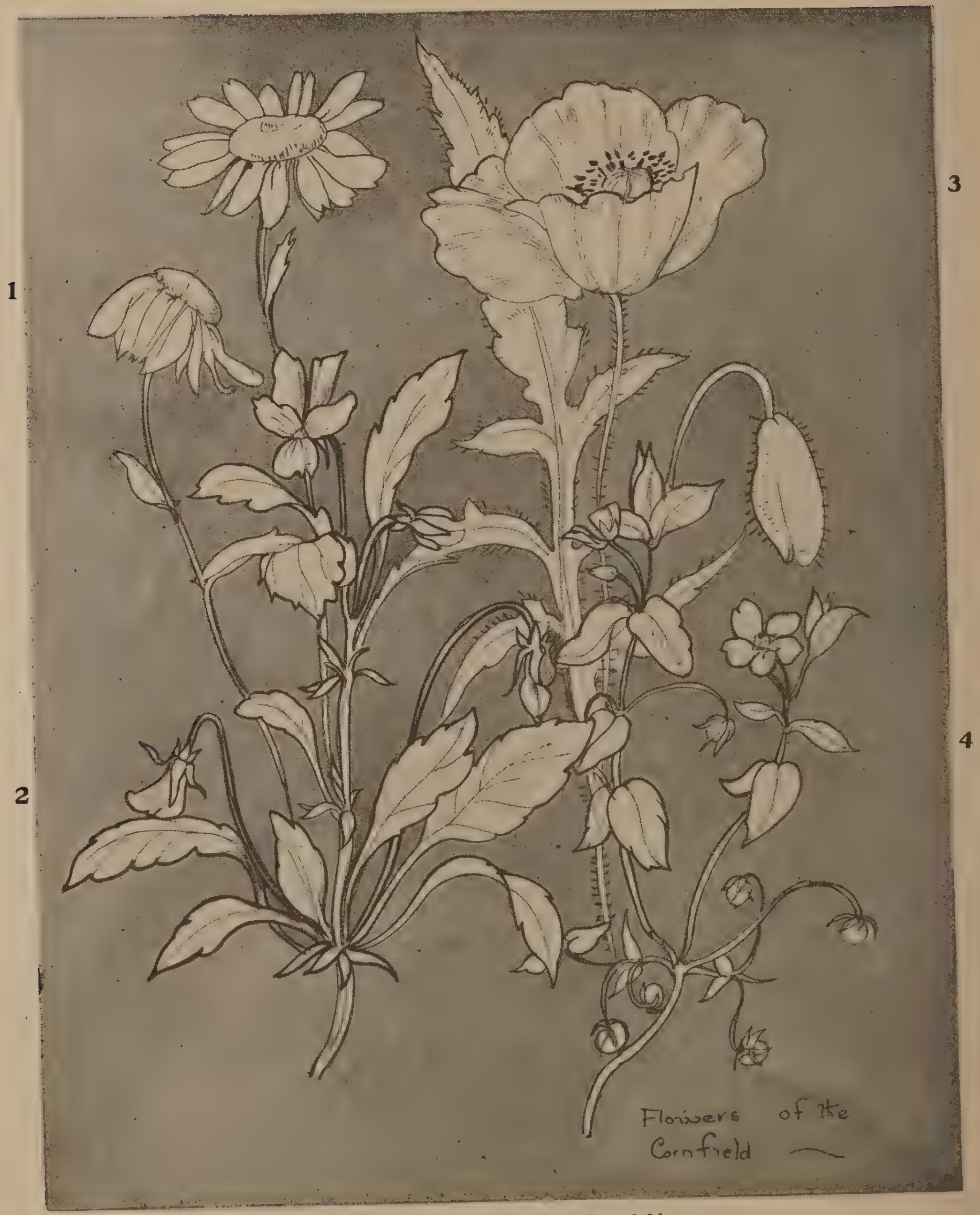

3
1
4
2
Flowers of the Cornfield

FIG. 49. *Flowers of the Cornfield*

(1) *Corn Marigold*, (2) *Field Pansy*, (3) *Poppy*, (4) *Scarlet Pimpernel*

think our soft grey skies unable to encourage such beauties as the scarlet poppy and the corn marigold; but the truth is they are colonists. Their original home is the sunny lands of Greece and the Mediterranean, and centuries ago, when the Romans conquered Britain, they brought with them corn from their granaries in Greece, and with this seeds of the wild flowers of their own fields, which gradually became acclimatized here wherever corn was sown, or where they could riot in waste places, unhindered by grass.

Few of these plants of the cornfield rely on wind to take the precious pollen from one to another, but their flaunting colours attract bees, butterflies, flies, and many other insects, which in flying from one to another flower carry pollen to the plants, and in return take pollen and nectar for their own children and friends. In spring our cornfields are bare of flowers, though covered with a sheet of emerald green; in summer they are a sea of golden corn picked out with intense scarlet, blue, mauve, and yellow; while in autumn nothing remains but stubble, and the birds, mice, and other little creatures hunting for the grain spilled from the farmers' sheaves.

Flowers of the Hedgerows (Fig. 50)

Come now to the hedges, the true wild gardens of our country, where plants, driven from cultivated lands and meadows, still find a home. They are never the same; each week sees a change, and this is what constitutes their great charm. Even in the bleak days of January and February the nature student loves his hedges, for there the unexpected may happen—sheltered flowers out of season foretell the spring; buds still tightly shut on the big trees show beneath their scales tantalizing glimpses of green, purple, and softest blue.

The hedge itself is formed of shrubby plants mostly growing on a bank, made by the throwing up of soil from a drainage ditch, or from the cutting of a road. They are planted thickly to prevent cattle from straying; and among the chief plants are hawthorn, wild plum, holly, hazel, beech, oak, elm, dogwood, elderberry, kept thick by annual lopping and pruning, which prevents too great an upward growth but stimulates dormant buds to shoot and so thickens the hedge.

Climbing Plants

Growing up these, we find some of our most beautiful plants. They have stems too weak to stand alone, but can, with little support, scramble up into the sunshine, where they wave their banners of white, pink, yellow, or purple triumphantly over the sombre but sturdy hedge. Some, such as blackberry and rose, have hooks at the back of leaves, or on stems, to catch on to any projection; some manage to climb by twisting their stems round other plants; such are hop, black bryony, honeysuckle, convolvulus (do all these stems twist the same way?).

Others, such as white bryony and yellow vetchling, have tendrils that twine round anything they touch, the free part between the support and the plant then takes on a twist, and a reversal point naturally occurs in the middle. Such plants cannot be easily wrenched from their support, for the tendrils form springs that give and take to meet the changing pressure of wind. (Fig. 51.)

Then there is goosegrass, that scrambles up by means of many tiny reflexed points on leaves and stems; and bedstraw, that arrives at the top by merely threading other plants with a multitude of thin stems. These last two, seeming the weakest of all, are usually the most vigorous climbers; we may often see a large patch of hedge obliterated by a sheet of goosegrass, while the woody nightshade, with much stronger stems, is a feeble climber, and often droops in a dejected way near the bottom of the bank, where it is starved of light and air.

Different "Types" of Plants

A hedge may provide a number of different types of plants belonging to different "regions"; thus there may be a ditch where marsh plants grow. There are often little landslips, or heaps of fresh earth turned up by the clearing of a ditch; here we may come across colonies of annuals, or the tufted seed of coltsfoot may find this new land so favourable to growth, that

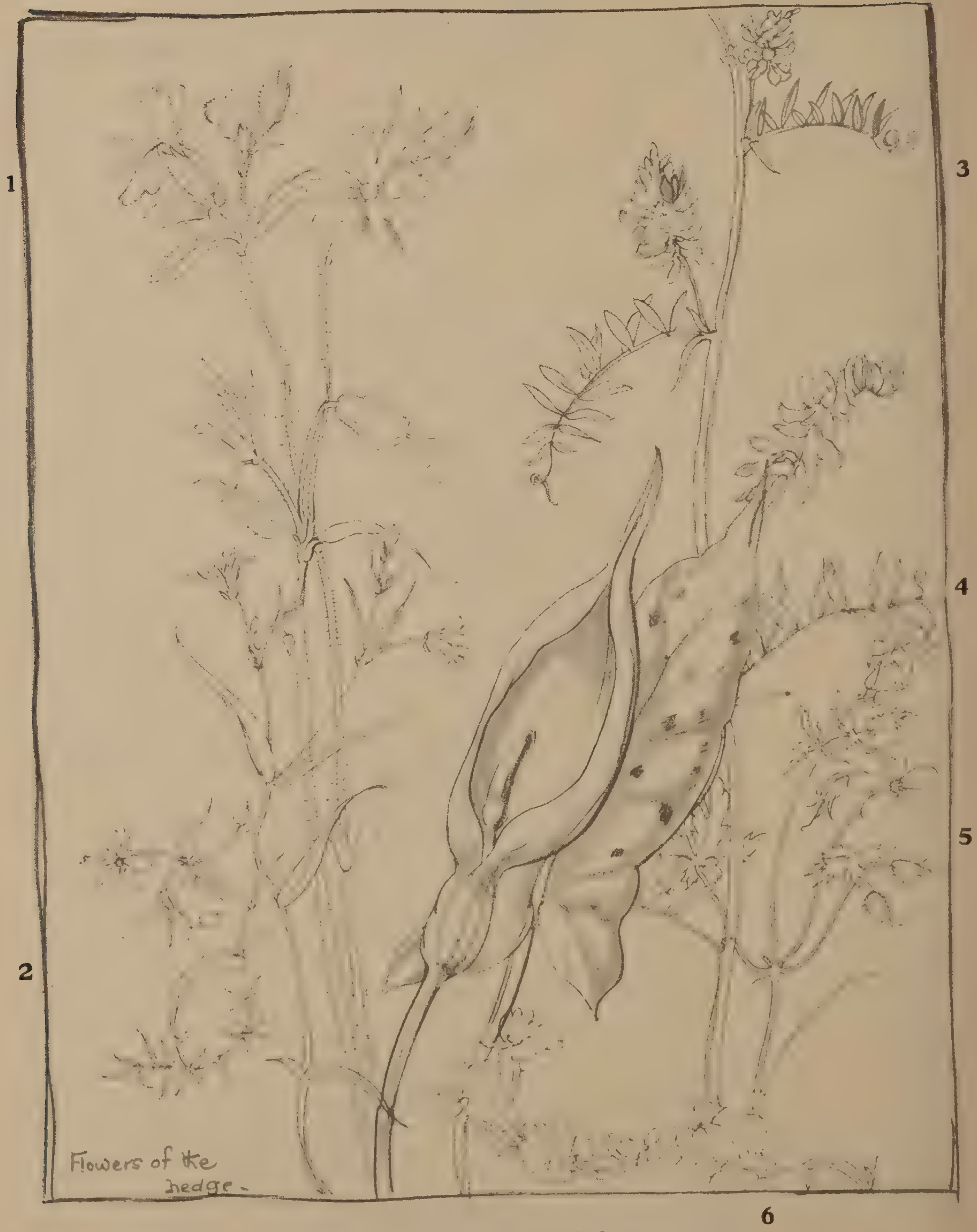

1
2
3
4
5
6
Flowers of the hedge-

FIG. 50. *Flowers of the Hedgerows*

(1) *Red Campion,* (2) *Stitchwort,* (3) *Purple Vetch,* (4) *Cuckoo Pink,* (5) *Herb Robert,* (6) *Ground Ivy*

before long the large leaves cover a wide area. Between hedge and road is often a strip which has been taken possession of by grasses, but in which deep-rooted plants like dandelion, plantain, rest harrow, find a home. Each of these regions has its own flora, which differs again with variations of soil and climate; even the two sides of a hedge rarely show the same type of flowers. This is very marked in the banks that run E. to W., for here there are decided sunny and shady sides, affording locations for plants of widely different requirements.

The Changing Seasons

From March to August there is a constant succession of plants, and the country teacher should show how some, like herb robert and small ivies, make their way by growing dense leaf mosaics, and scooping out places in the hedge. Others, as mullein and foxglove, form enormous rosettes, that grow over other plants and ensure room for the tall flowering spikes. Others, again, like sheep's parsley, pig nut, wild parsnip, have finely divided leaves which allow light to filter through to the leaves lower down on the stem. For the succession of hedge and flowering plants, refer to page 764 and onwards.

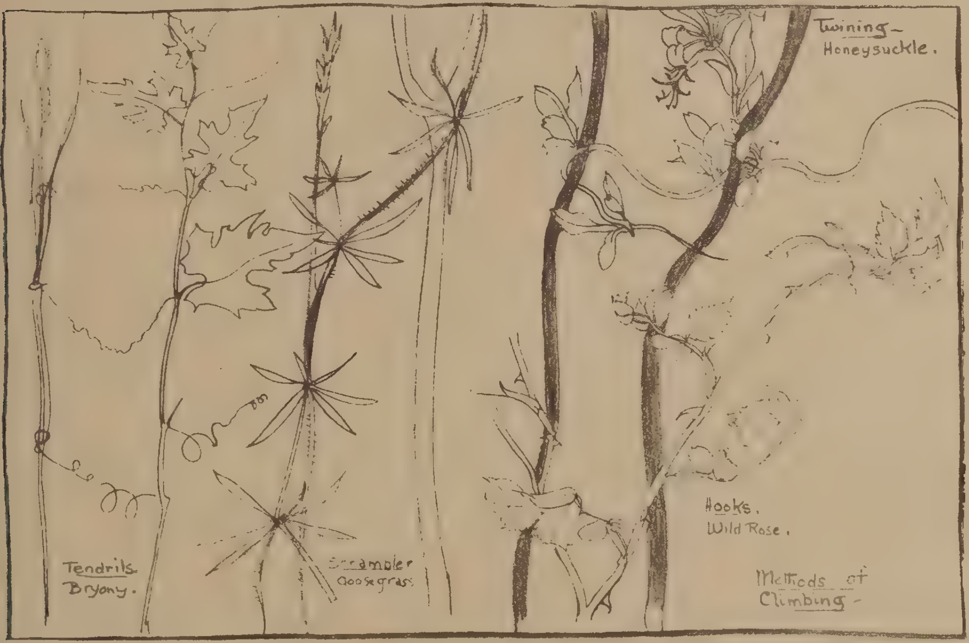
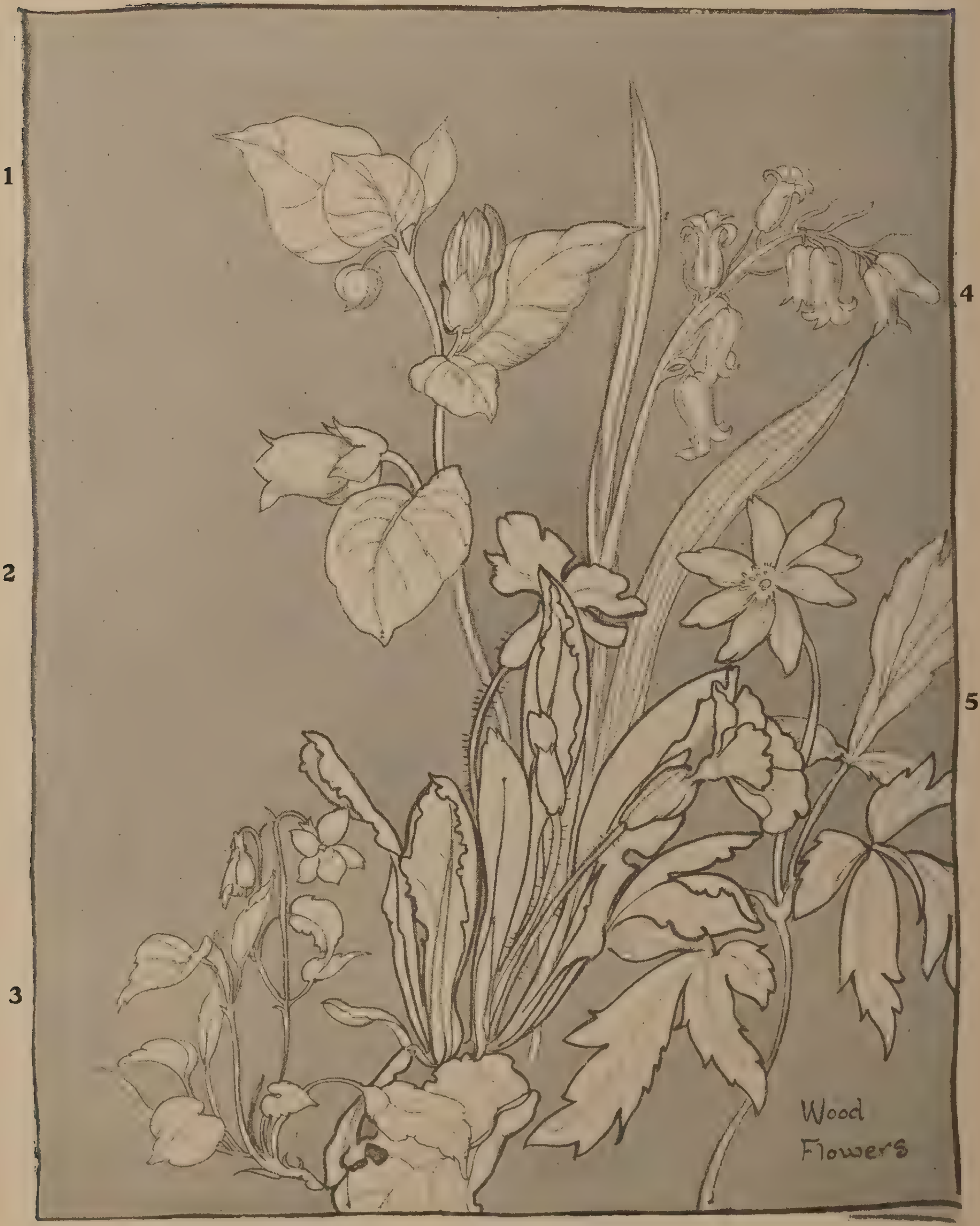

Twining - Honeysuckle.
Tendrils. Bryony.
Scrambler Goosegrass
Hooks. Wild Rose.
Methods of Climbing -

FIG. 51
Methods of Climbing

Seed-time

In autumn the interest in flowers gives place to the interest in fruits, and no "hunting ground" is so rich as the hedge for seed-vessels of all types. There are berries of bryony and woody nightshade, of brilliant yellow and vermilion; scarlet haws and hips of hawthorn and rose; winged fruits of maple, sycamore, hornbeam and ash; fruits and seeds with parachutes, like dandelion, willow herb, goatsbeard; or sinuous feathery styles, like clematis; and fruits resembling carved boxes with lids, holes, or valves to let out the seeds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Wood Flowers

FIG. 52. *Woodland Flowers*

(1) *Deadly Nightshade*, (2) *Primrose*, (3) *Wood Violet*, (4) *Bluebell*, (5) *Wood Anemone*

at right times, such as campion, plantain, chickweed, poppy, bell flower, etc.

The stories of how Nature uses wind and water, birds, insects, animals, and even man, to help her send out her seed babies into the world; where they travel, and when they grow, are all a part of the Autumn work.

Trees and Flowers of the Woodlands

Teachers whose children live near a wood will deal with a different type of plant study. Let the children find out the main trees, whether planted in masses of the same variety, or dotted about, for this will affect the undergrowth and the " floor " of the wood. (*See* Fig. 52.)

Thus, in oak woods on clay and moist soils, the most common shrubs will be hazel, sloe, wild rose, elder, hawthorn, guelder-rose, and holly; while the chief herbaceous plants will be bluebell, anemone, primrose, spurge, oxalis, wood violet, yellow pimpernel, and herb robert. In beech woods, which occur chiefly in S.E. England, the dense shade is unfavourable to the growth of other plants except a few mosses; but where clearings have been made, or on the borders, we may expect to find hawthorn, white beam, wayfaring tree, spindle, buckthorn, dogwood, juniper, and yew, besides such special herbaceous plants as enchanter's nightshade, sanicle, daphne, deadly nightshade, and wood violet.

Making Plant Study Interesting

In the study of plants, it is far more profitable to let the children become familiar with the habits of plants of a special region, e.g. of field, hillside, wood, or hedge, than to take a number of " lessons " on individual flowers. Beginning with just naming a bunch gathered from one such region, and watching what insects come near any flowers, the teacher can go on to give some knowledge of how these plants get over various difficulties, e.g. of winter; do they die altogether, but send out their protected seeds? Does the herbaceous part die down? Where is the food reserve stored which will enable growth to take place next year? How does each plant provide for its young? What are its friends and enemies?

Later, children may hunt for different stages in the growth of any one plant and draw them; also make flower charts of the particular district.

This should always be presented as a living thing, with special preferences in the way of food, supply of water, light, and habitat. Thus, rhododendrons dislike any soil containing lime, while mignonette will not grow without it. Willows, thirsty souls, can hardly have too much water, while holly likes a nice dry sandy hillside, with a shower now and again. Poppy likes brilliant sunshine, while violet seeks shade; daffodil keeps open all night, but tulip closes up and " sleeps." Each plant has its own enemies; grubs underground; insects, such as aphides, caterpillars, beetles, above ground; creatures like rabbits, mice, and even sheep and cows, may bite off great pieces. Find out if this plant has any means of defence—nasty taste, poisonous juices, stinging hairs, thorns, spikes, etc.

What plants does it like to grow with? As an example of plant " friendship," the following may be cited. Some gentians (verna) were brought from the Alps and planted in the soil and aspect they love, but did not thrive well until crocuses, other gentians, harebells were planted with them, when their vigorous growth showed they fully appreciated company.

Talk over the way a particular plant has of attracting its helpers; find out the honey stores; where does it keep its seed children, and how does it send them forth? Plant some and watch the growth. What does it do in winter?

Plant Families

Tell of its family and relatives, e.g. how rich in " cousins " is sweet pea; and, except that their flowers bear a family resemblance, how different they are! There is tall tree laburnum, exquisite wistaria with lovely mauve blossoms, a foot or more long; lupin, with the piston in its keel to push out pollen; the prickly gorse, and dainty clover that bees love. It is, indeed, a difficult task for any town teacher to take Nature Study, but she is well repaid if she can give some little idea of the great web of life, and of the *livingness* of those sub-human beings which share the earth with us.

OBSERVATION OF TREES

IN the study of trees, the town teacher often has the advantage of her country colleague, for in the parks almost every variety is grown, and as there is no crowding, the characteristic growth can be displayed to the best advantage.

The best time to begin tree study is in winter, when children can see clearly the shapes of the trunks and the tree tracery. Twigs of the various trees under observation should be brought into the room and placed in water, when the buds will open some weeks before those on the trees out-of-doors. This plan gives the children a better chance of getting so familiar with the shapes that they are able to recognize old friends as they come out.

Tree Maps

A tree map of the district under observation can be drawn up, and a record kept of the important happenings to trees through the year, e.g.—

TREES IN OUR PARK

Name	Leaf buds out	Flowers out	Fruit ripe	Colour and fall of leaf
Oak etc.	April, last week	May, 2nd week	October	Yellow and brown, end of October

In the study of trees, children should notice the bark and its crevices, which are splendid places for insects and their pupae to hide; and even in this respect there are great differences. Thus, the oak and elm have the most elaborate network, while the birch and beech bark is almost smooth and can accommodate few creatures.

How the Tree Grows (Fig. 53)

The branches of trees are in tiers, each one projecting as we look from top to bottom. This arrangement has a two-fold efficacy; it enables the lower branches to get their share of light and air, and on the branches the leaves of the tree are so arranged that they collect water and drop it from their points on to those below, so that finally the water from a shower of rain is conveyed to the lowest tier, where it drips to the ground below. If we could see below ground, we should find that all the newest rootlets lie in this ring ready to suck up the moisture collected by the towering crown above.

Leaf Buds

Other points of interest are the difference in growth on sunny and shady sides; of one-sided growth in wind-swept places; and differences in behaviour according as the tree can grow freely, or is crowded into a copse or wood with others. Buds, too, show great differences in shape—some are pointed, as beech; or rounded, as chestnut. In the matter of position, some buds are set opposite, as sycamore, and some alternate, as elm; some are crowded together, as at end of oak; some are very far apart, as in plane; some are hairy, as ash; some smooth, as lime; and some, as chestnut, are very sticky. Hairs, corky layer, waterproof resin, shining surfaces, are all devices for protecting the delicate baby leaves within. Then, as the buds open, note how many are packed in with wool, or hairs; and how wonderfully they are folded. Children could cut out large paper leaves and try to fold them in some of the simpler modes.

Tree Flowers and Leaf Shapes

Then will come the watching for father and mother flowers, and the development of the seed children and the ways these voyage forth into the world. Trees will be watched for bird visitors and insect inhabitants, until the leaves colour and fall, leaving the buds once more visible and so completing the circuit.

Children will delight in finding the relationship between the shape of the leaf and of the whole tree. If they draw a large black poplar leaf, its shape gives the outline of the tree against the sky. Try this with other leaves. The tree with which each is compared must not have been lopped. In skeleton leaves, found beneath trees in winter, children can often recognize the shape and method of branching of the whole tree.

Skeleton leaves collected and bleached—by soaking them all night in a weak solution of chloride of lime—can be mounted on dark paper, when the wonderful beauty of vein tracery can be clearly seen.

We have space only to notice a few of our chief trees, but teachers should study such a book as Step's *Wayside and Woodland Trees*, to help them verify their own observations, and to suggest new points for study.

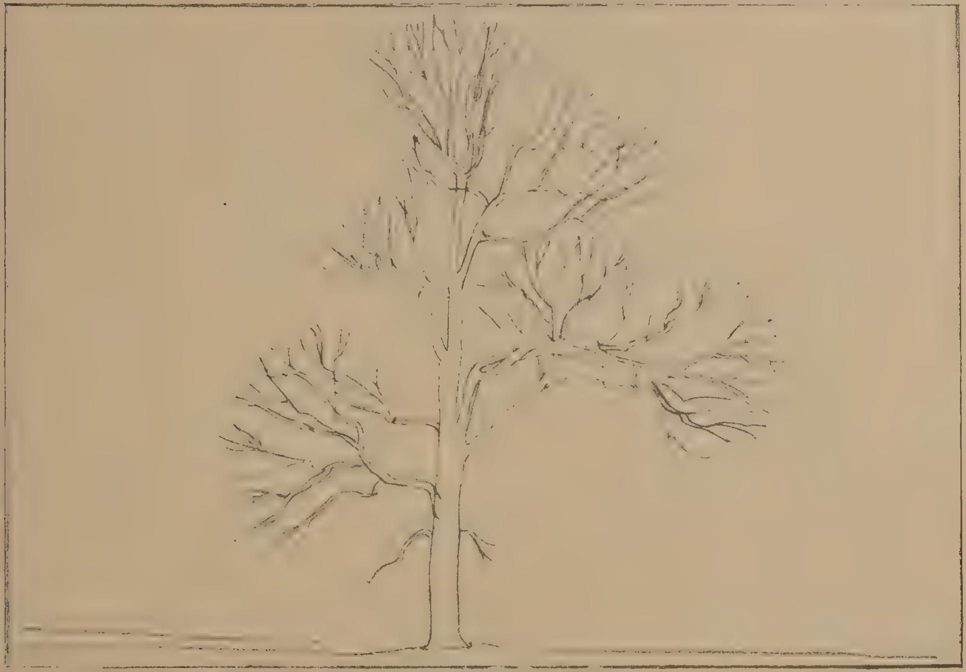

FIG. 53

Elm Tree to Show "Tiers" of Branches

The Plane Tree (Fig. 54)

In towns, the planes planted along the streets are deserving of much notice. Almost every detail of structure enables them to keep clean; they renew the old bark each year, the greenish grey patches of new growth being specially noticeable in winter; the polished stems, and smooth five-pointed leaves, can be washed clean with each shower of rain, and the leaves are so far apart, that the wind can blow through them and keep them free from dust. In May and June, the round bunches of catkins two to six inches long appear. The smaller are the male flowers, that are borne on a stem by themselves. The larger ones form the fruits, little globes of tufted "nuts" which hang on the trees all the winter. (Fig. 55.)

The plane is often attacked by the vapourer moth, a small reddish brown creature with two white crescents on his front wings. Look for his wife; she has no wings, and so never leaves the tree on which she was born.

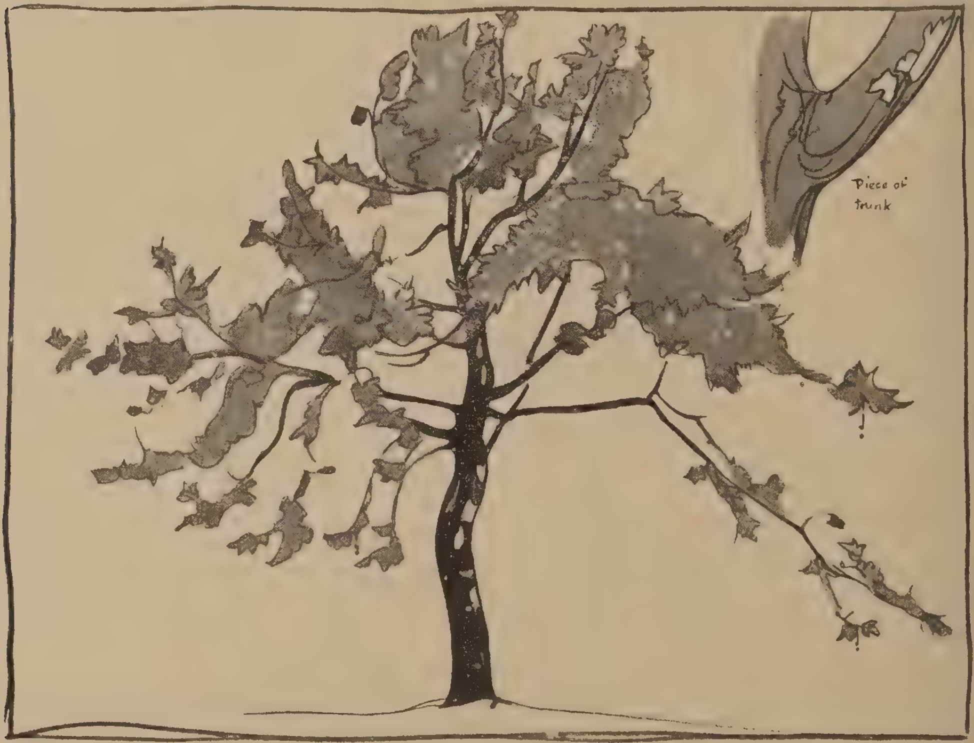

FIG. 54
How the Plane Tree Renews its Bark

The Sycamore

Somewhat similar to the plane is the sycamore, a much denser tree which, however, thrives in towns. Compare the shapes and positions of the leaves of the two trees. The greatest difference lies in their flowers and fruits. The flower catkins come in April, and consist of a number of complete yellowish-green flowers, each with narrow petals and sepals, eight stamens and a two-lobed pistil. These last develop into the winged fruits, which fall with such graceful whirling movement by the single propeller, early in October. Then the leaves turn a beautiful clear yellow, often spotted with black marks of the "ink" fungus, that helps in the disintegration of the sycamore leaves. (Fig. 55.)

The Three Poplars

Most children know at least the three chief poplars of our country. There is no possibility of mistaking the tall flame shape of the Lombardy poplar, with all its branches growing straight upwards. Apparently we have only one variety—the male, for it never produces seeds, and has to be propagated by suckers.

In the white and black poplars, the male and female flowers grow on different trees, and the males are more numerous than the females. Both have somewhat similar heart-shaped leaves with broad bases, and both have cylindrical catkins which appear in March and April. But they may be distinguished by the difference in colour of the staminate catkins; the anthers of the white poplar are purple, those of the black poplar are bright crimson. (Fig. 56.)

When seed capsules of the white poplar open in July, and of the black poplar in June, the ground beneath these trees seems strewn with cotton-wool, so numerous are the white filaments surrounding the seeds.

Goat Willow

Even town children are familiar with the branches of "palm," or catkins of the goat willow that are sold in the streets in February and March. These are the male flowers, and the sweet scent and abundant pollen attract an enormous number of bees, so that one can tell the locality of such a tree before it is seen, by the loud hum of busy insects.

The female flowers are on another tree, and have conspicuous greeny-grey catkins, and look like a series of minute vases, each with a honey gland at the base. The two flowers form a study in gold and silver, and, before they are fully out, they look such soft furry round things, escaping from under the brown sheathes, that children have no difficulty in remembering the

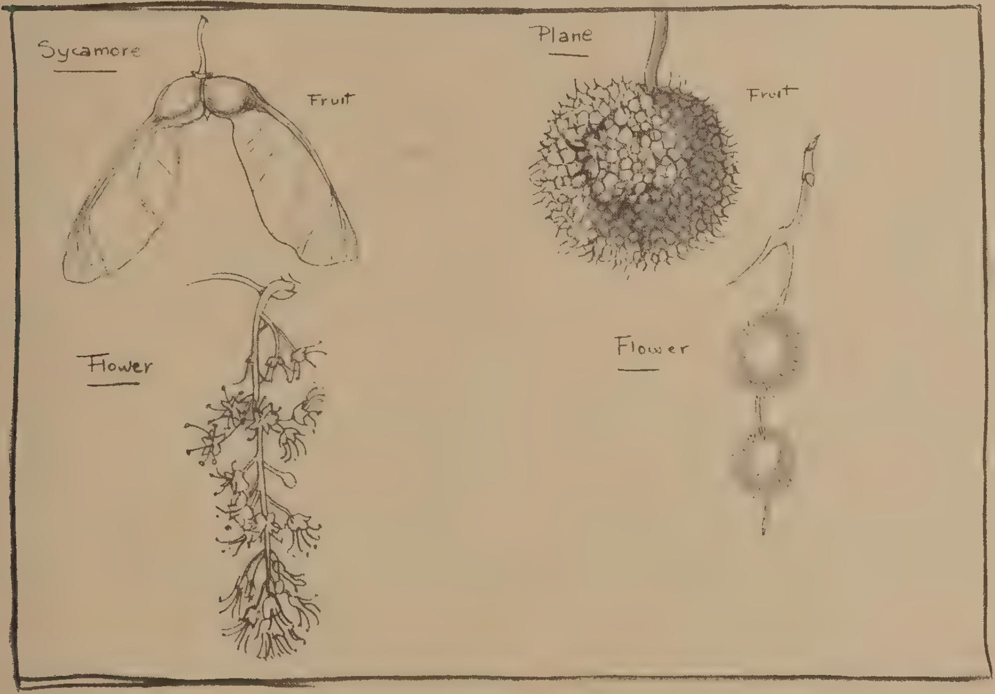

FIG. 55
Plane and Sycamore Flower and Fruit

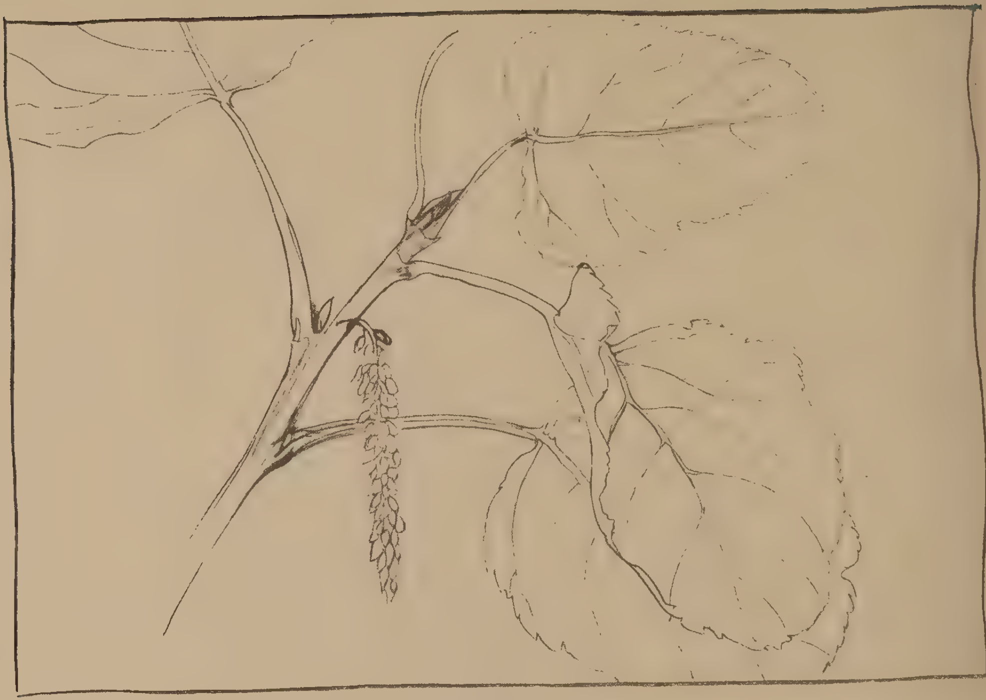

Fig. 56
Leaf and Flower of Black Poplar

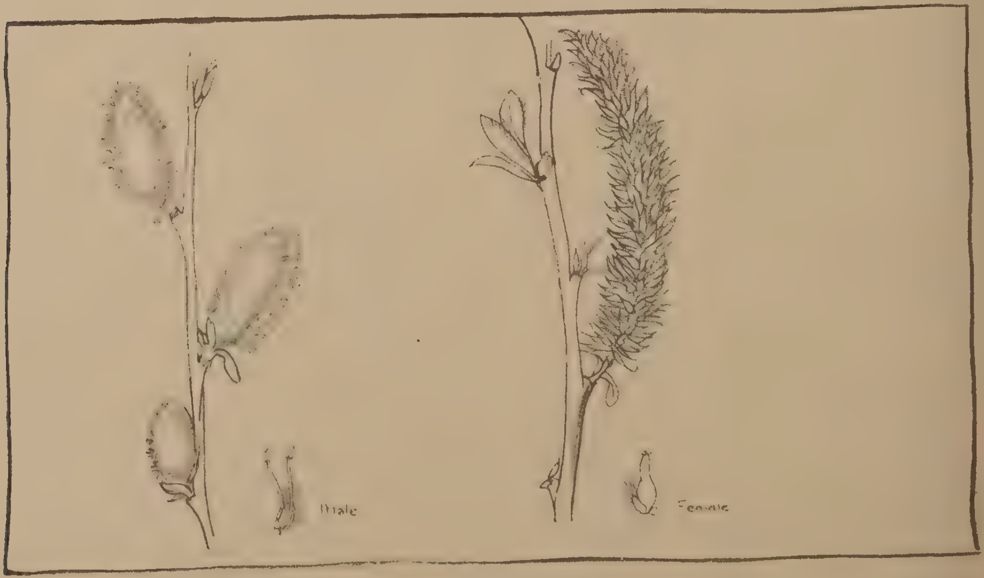
Male
Female

Fig. 57
The Goat Willow Flower

word "catkin" because it recalls little cat. (Fig. 57.)

The Elm Tree

The elm is easily recognized in winter by its wonderful bough tracery, and rough bark that is often corky. Sometimes twigs may be found looking three or four times the normal size, on account of the growth of cork. The trunk is broken up by a network of fissures only equalled in intricacy by the oak. In March, the brownish crimson flowers are produced in groups from the sides of the branches, long before there are any signs of leaves, and in May and early June the fallen flattened fruits look like leaves under the trees. The leaves have unequal lobes at the base, and tiny tufts of whitish hairs are to be seen in the angles where the large veins join the main vein. These hairs have an irritating quality, somewhat like those on a nettle leaf, only in a much less degree. (Fig. 58.)

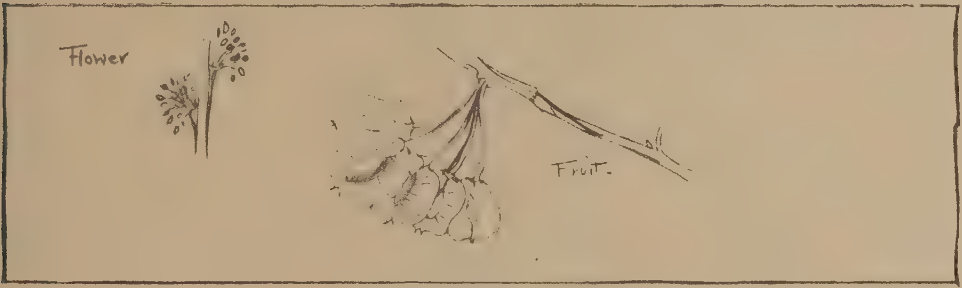

Fig. 58

Elm Tree Flower and Fruit

The Oak Tree

The oak is so well known to every child, on account of its leaves and acorns, that it is hardly necessary to comment on it here. But the two kinds should be looked for; they are distinguished by their leaves and fruit stems. There is one (*sessiliflora*), having very short stems connecting the acorns with the branch, but the leaf-stalks are long; the other (*pedunculata*) has a very long stem connecting the acorns with the branch, but the leaf-stalk is short or absent. Usually the former is found in higher ground; the latter prefers lower hills and sides of valleys.

Fruit Trees

Although most trees bear fruit, the name "fruit tree" is generally given to those which bear fruit eaten by man. We cannot go to woods and copses to pick apples, plums, cherries, etc., but we can find the parent trees of these edible fruits. In early spring the wild cherry is an exquisite sight, with its pyramidal mass of blossom like a snowdrift; and in July the small bitter red and blackish cherries, that are nearly all "stone," are sought after by birds. In April the common crab-apple puts out its delicate pink and white blossoms, to be followed in October by ripe "crabs."

Country children gather these for their mothers to make the crab-apple jelly that is still part of the autumn work in many a cottage, and some are nearly sure to be buried, in the belief that a few weeks' contact with Mother Earth will sweeten them for "bob apple" at Christmas.

Another of our wild fruits is the sloe, the parent of our damsons and plums, whose dark blue fruits, coated with exquisite grey "bloom," are so attractive as to tempt the unwary into tasting—only to find that they "shrivel" the mouth as does no other fruit. But even these are used in country homes to make the sloe gin and wine that are so comforting in the bitter cold of winter, and are still believed by old cottagers to be the specific for rheumatism. The flowers come out in April, usually in a time of bitter east winds, and when the countryman sees the starry white blossoms decking the black thorny stems, he speaks of "blackthorn winter."

INSECTS AND SPIDERS IN FIELD AND GARDEN

If there is one thing more than another that suggests summer, it is the busy hum of insects; and though the sound each makes individually is very slight, they exist in such countless millions, that from dawn till dusk the air seems quivering with sound. The hum of hive bees, the deeper drone of the humble bees, the sharp ping of gnats and flies, the click and whirr of dragon flies, the chirp of crickets, the dry rustling of grasshoppers, are but a few of the multitudinous notes that make the essential song of summer.

Insects—Friends and Enemies

However small the garden, if it has only a few flowers, we are sure to find insects that are some of them friends to plants, and others that are enemies; for insects have business with plants in these two ways, to help, and to destroy. They help in the propagation of plant life by transferring pollen from flower to flower, and so ensuring the continuation of the species. It is for such that plants deck themselves in bright colours, and allure them with sweet scent, and feed them with nourishing honey and surplus pollen, so that some of the insects can take of the rich supply and feed their own young. Without insects many plants, such as clover and beans, would soon cease to produce fertile seeds.

Stand by some dandelion, saxifrage, or buttercup for a few minutes, and note the number of insects that visit it in the sunshine—midges, small flies, tiny dark beetles, and perhaps a bee. These, except the bee, are all creatures with short tongues, and for such there are shallow saucer-like flowers with honey of easy access. Then watch near a foxglove, snapdragon, or delphinium; there are no flies here, but heavy powerful bees who know the secrets of these flowers that have learned how to bar their honey against insects which cannot help them. Towards evening, when the honeysuckle and tobacco flowers give out their fragrant penetrating scent, see how moths hover round, with their long tongues uncurled to suck up the sweet nectar that cannot be got by most insects, because their tongues are too short.

From observations such as these, we begin dimly to realize how flowers and insects have adapted themselves to one another's habits and needs, and that each has much to give the other. While insects render service, plants give in payment the food they have prepared.

Enemy Insects

But there is another side of insect life in relation to plants. Cultivated plants, especially, are attacked by many enemies, and were it not that the attackers are in turn devoured in quantities by still more powerful birds, our food plants and choice flowers would soon be exterminated.

Look on delicate young rose shoots, or under new leaves of apple, pear, cherry, lime, sycamore, carnation, and many other plants, and you will find a tiny green fly, or aphis, existing in such enormous numbers that it is often impossible to see a piece of leaf or stem. Each has a green body raised on six slim legs, with two tubes projecting from its back. There it stands with its beak-like mouth plunged into the leaf, and it sucks and sucks until its body is so full of plant juice that some exudes at the end to be licked up by ants, that are seldom far away from aphis-infested plants. (*See* Fig. 59.)

Each grown aphis has from three to nine children a day, who scramble over mother to find an unoccupied place in which to plunge their beaks, and they in turn suck juice and produce young till the plant shoot is ruined.

In autumn, aphides lay eggs which remain unharmed through the winter, ready to hatch out in spring to begin the new year's work of destruction. One kind, known to gardeners as "black blight," infests beans; and another masquerades as a bit of sheep's wool, for it puts out threads of white waxy material from its beak, and looks just as though a sheep passing that way had left a bit of its wool on the rough bark.

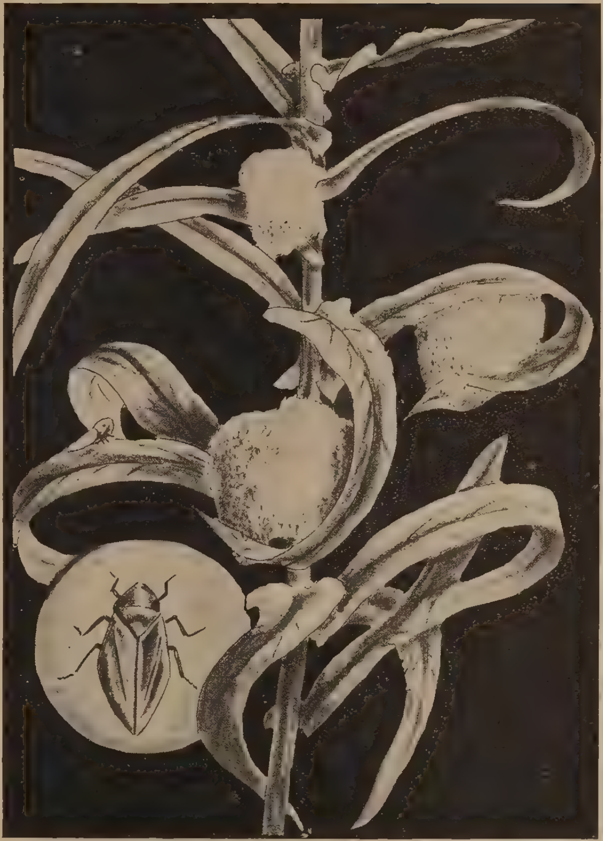

FIG. 60

Froghopper and "Cuckoo Spit"

(*Inset, Froghopper enlarged*)

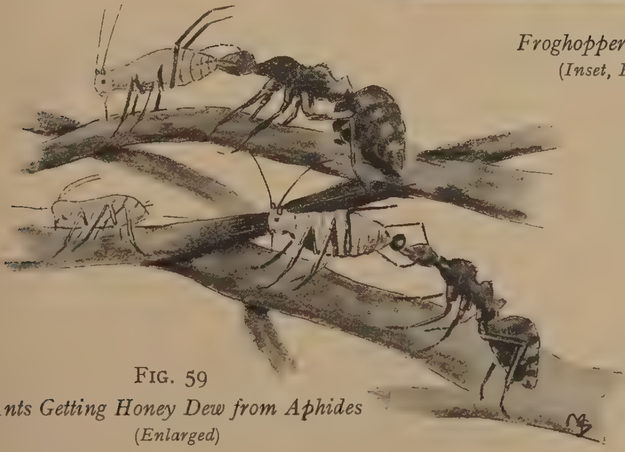

FIG. 59

Ants Getting Honey Dew from Aphides

(*Enlarged*)

The Froghopper

Another destructive, but interesting, little creature is the froghopper (Fig. 60), which is very active from May to July. It also sucks plant juice, and likes to wedge itself in the angles where lavender leaves join the stem, or under leaves of Michaelmas daisies, spiraeas, carnations, grass, etc. When young, it has a softish green body unable to bear the heat of the sun, so it exudes a waxy material into which it blows air, and churns it up to a kind of soapy froth we speak of as "cuckoo spit" (Fig. 60), which serves the double purpose of keeping it cool and of screening it from passing birds. Very soon the leaf curls and wrinkles, and its whole appearance is spoilt.

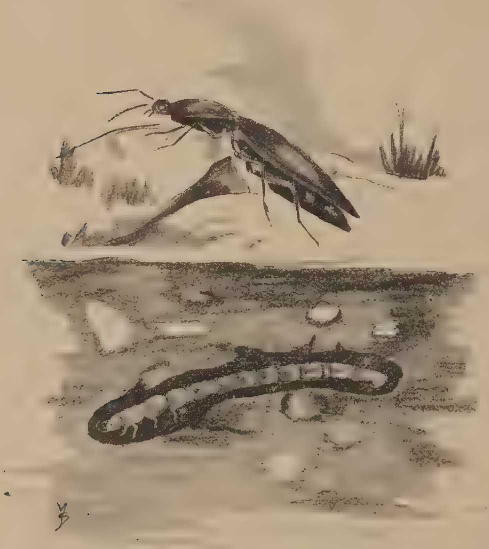

FIG. 61

Click Beetle and its Larva, the Wireworm

(*Wireworm enlarged*)

Later, when fully developed, the little frog-hopper leaps about, alighting with a pat on our bodies, and is off again before we have had time to examine its bright eyes and quaint shape.

Underground Insects

Underground, plants fare no better, for even their roots are not free from the ubiquitous insect.

Now, in their development, most insects pass through certain stages—the egg, the larva or grub, which eats and grows, and the more or less quiescent pupa which develops into the perfected insect. It is in the larval stage that insects mostly do vast mischief to plants, and many of these live underground, feeding on roots and shoots.

There is the wireworm one inch in length (Fig. 61), a yellow rod-like creature whose stiff body is the same thickness throughout. It is the young of the click beetle, or skipjack, that curious, black, ugly-looking insect which, if placed on its back, arches its body and jerks itself upwards, alighting on its feet—but having turned a somersault in the process. The wireworm lives on roots of grass and many other plants, and burrows into potatoes.

Then there is the "leather jacket"—the child of the daddy-long-legs—which, in its larval state, is a dull looking grub about one inch long, with a tough coat so much the colour of earth that it is not easy to see it. Feeding on grass roots, leather jackets often do much harm in cornfields. They pupate in spring, work their way upright through the soil, and at the surface project two little breathing horns; then, after a while, the case opens and the daddy-long-legs emerges as though born from the ground. (*See* Fig. 62.) It is fortunate for farmers that they have good bird friends in starling, gull, and rook, who not only dig for the leather jackets, but are on the watch to devour the mature crane flies as they emerge.

Cockchafers

In parts of the country where oaks grow, if we walk out on evenings in late spring, a heavy beetle may blunder into us, announcing his passage by an unmistakable buzzing sound. It is the cockchafer beetle, which haunts oak trees, and is often found in enormous numbers in their vicinity (Fig. 63). They feed on leaves and often do great damage. During their short aerial life of six weeks, they lay eggs in the ground which hatch out into grubs, which are one of the farmer's most destructive pests.

They look sluggish, inert, whitey creatures, with feeble legs (Fig. 64); yet as they have enormous appetites for root fibres, and live three

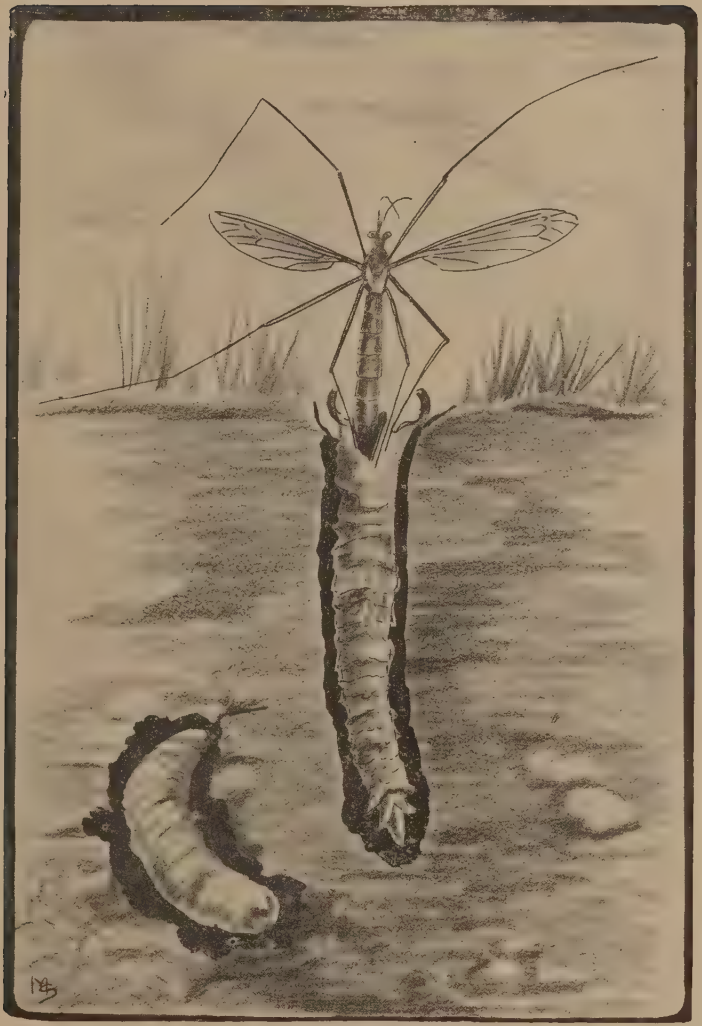

FIG. 62

Daddy-Long-Legs Emerging from Pupa Case, and a Grub, or "Leather Jacket" years underground, they manage to destroy many plants. Fortunately, again, the starling with its strong serviceable beak is a first-class digger who understands to a nicety the ways of cockchafer grubs.

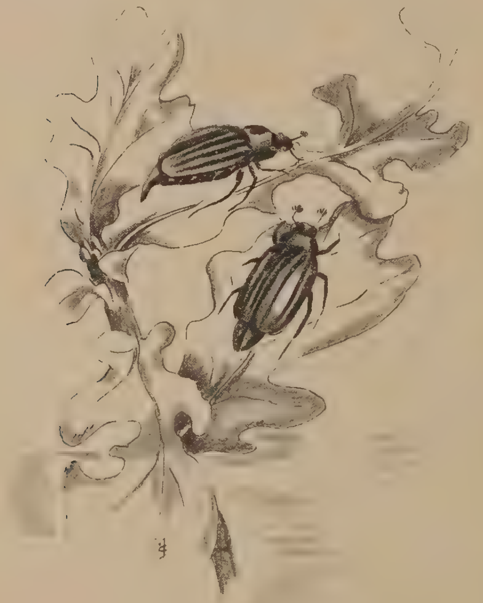

FIG. 63
Cockchafers

The Nut Weevil

Many children in autumn gather nuts from hedges, or, in towns, buy them from shops or barrows, and how often does disappointment follow the cracking, when, instead of a plump kernal, a pinch of dust is to be seen. This is the work of a tiny beetle called the nut weevil, of whom Shakespeare writes

> "*the old grub,*
> *Time out of mind the fairies' coachmaker.*"

This weevil (Fig. 66) has a snout for boring, and in late spring pierces the unripe nut and lays an egg within. When the grub hatches out, it finds a store of fine food. Having devoured this and come to its full development, it bores through the shell, leaving a small round hole and a pinch of dust within to reveal the full extent of its villainy.

The nut weevil has many relations, each of whom bears the family characteristic of a long snout and elbowed antennae, whereby we may know them. There is the pea weevil, whose eggs hatch out into the little legless maggot that spoils the peas; while rice and wheat, turnip and cabbage, birch and apple trees,

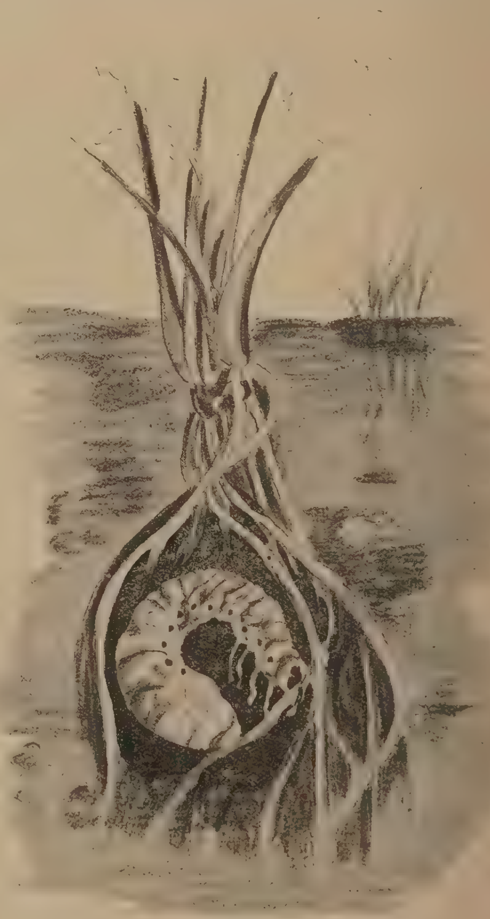

FIG. 64
Cockchafer Grub, Eating Root of Strawberry

beside many other plants, have their own peculiar weevil pest to do them mischief.

Butterflies and Moths

Now we will turn to the most beautiful of all insects, the butterflies and moths, which are viewed very differently according as one is a gardener or just an ordinary lover of beauty. The gardener's business is to provide food for his family, and to him the butterfly is an enemy of plant life. An ordinary person, knowing little of the "balance of Nature," appreciates the artistic effect of Peacock butterflies on purple buddlea, of the Orange Tip on "milkmaids," of the Cabbage White on nasturtiums. To the one they stand for devastation ; to the other—just beauty.

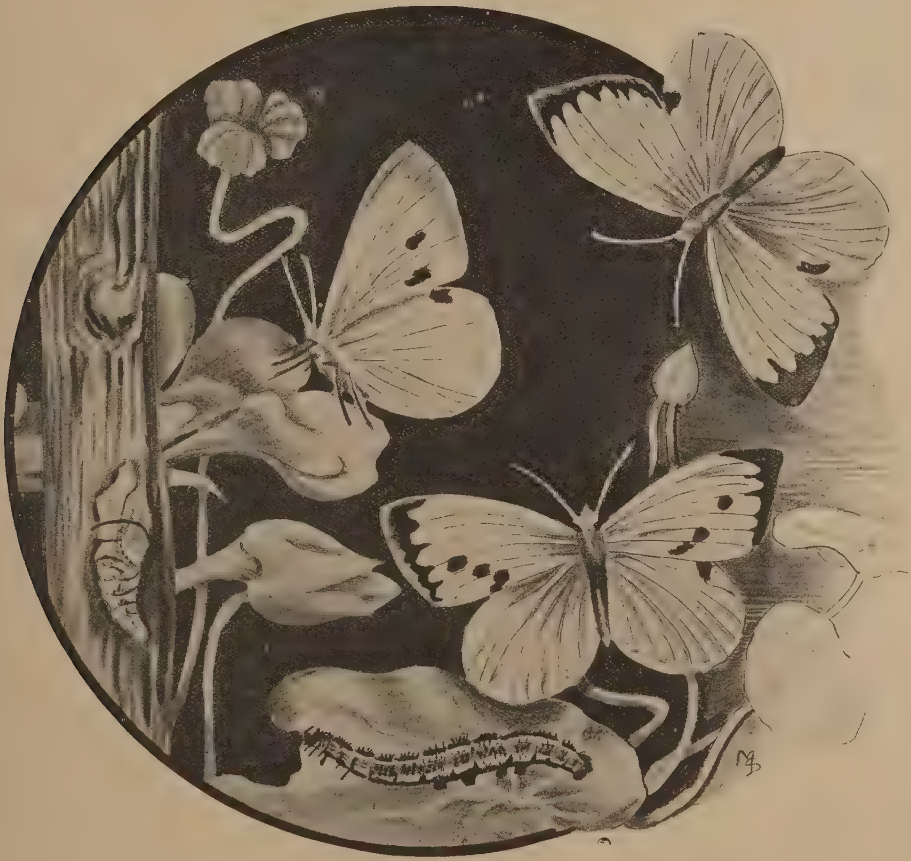

FIG. 65

Cabbage White Butterfly, Caterpillar and Chrysalis

There are so many varieties of butterflies and moths, that it is impossible here to do more than indicate how to study these insects with children, and to name a few of the commonest varieties, especially those they are likely to find near their own homes. (See Fig. 67.)

The Cabbage White Butterfly

One of the most familiar butterflies is the Cabbage White (Fig. 65), of which the caterpillars make such havoc among cabbages and nasturtiums.

Since they can be found in almost any garden where these plants grow, their development can be watched in out-of-school hours; while a few could be collected and put in a simple "development" cage, such as shown on page 849, and supplied with fresh food so that the teacher can better guide the children's observation.

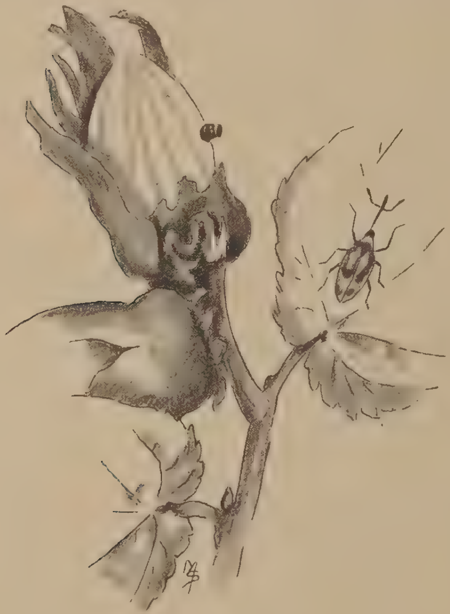

FIG. 66

Weevil. Maggot Creeping through Nut

The development of the Cabbage White may be taken as typical of all the Lepidoptera.

The yellow, vase-like eggs must be sought on the under side of the leaves, where they will be found either singly, or in small patches. Each hatches out into a pale bluish-green caterpillar, with three longitudinal lines, and the segments are dotted over with small raised dark tubercles from each of which sprouts a hair. There are thirteen segments, excluding the head, and the first three bear the pairs of true legs, while on other segments (6, 7, 8, 9, and 13) are clasper legs, which support the weight of the body and enable the caterpillar to take a firm grip of the leaves.

Six pairs of small eyes peer downwards from the cheeks, and three pairs of powerful jaws are specially modified for leaf cutting and chewing.

From time to time the skin has to be cast off, for the caterpillar grows quickly, and its coat is not elastic; this happens five times. At length, having arrived at its full size, it leaves off eating, climbs up a paling or branch, and changes to a bluish-white chrysalis, dotted with black, bound to the support by a white silken band round its middle.

Two Broods of Caterpillars

The Cabbage White has two broods in a year, the first comes out in May, the other in August and September, and while the early caterpillars develop quickly, the last reach the pupal stage, in which they remain all the winter. Fortunately, birds in the hungry winter-time find out the chrysalids and devour many, or gardens would fare badly in spring. When the May caterpillars hatch out, they are taken by birds as the principal baby-food of many nestlings, and in this way immense numbers are destroyed.

Children should be led to realize that birds are the farmers' and gardeners' best helpers in keeping down harmful insect life, and a useful story towards this end is that told by Longfellow in the "Birds of Killingsworth."

The question as to what keeps down the later caterpillar pest, when there are no more baby birds, may be asked, and the teacher should show tiny yellow cocoons of the ichneumon fly, which lays its eggs in the larvae of the Cabbage White, and whose developing young feed on the caterpillars. If it were not for this terrible but useful fly, we should get little cabbage food for the winter.

Other caterpillars of butterflies should be sought on their favourite food plants, and a few transferred to cages for closer observation, e.g. Tortoiseshell and Peacock on nettles, Magpie on currants and gooseberries, Orange Tip on cuckoo-flower, Painted Lady on thistles, the "Browns" on grasses and heather, the "Blues" on clover, bird's-foot trefoil, horse-shoe vetch, etc.

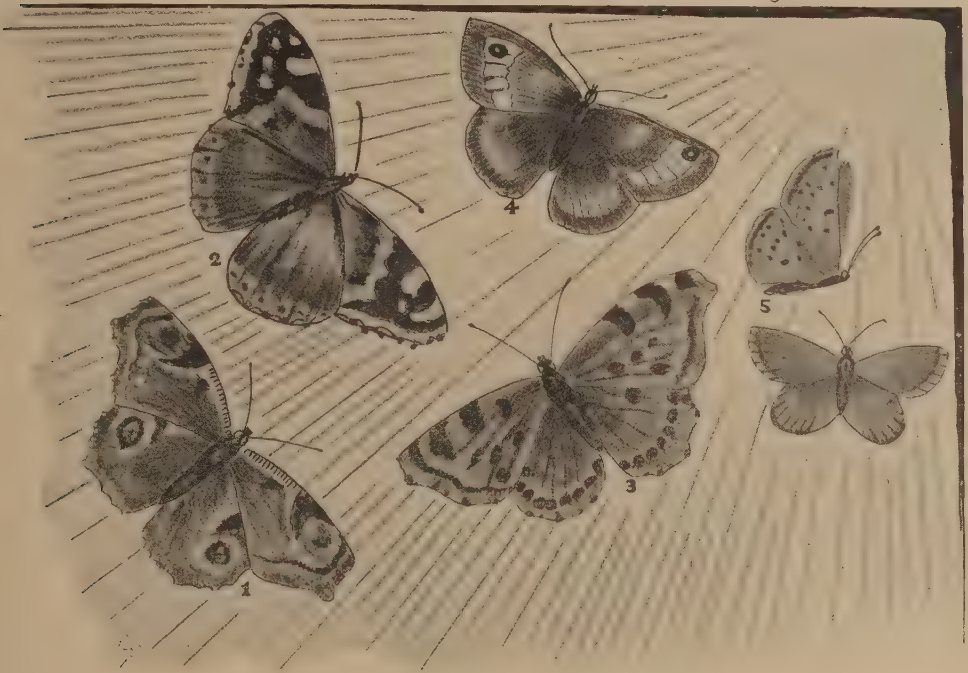

FIG. 67

Butterflies

(1) *Peacock*, (2) *Red Admiral*, (3) *Tortoiseshell*, (4) *Meadow Brown*, (5) *Blue*

Moths and their Larvae (Fig. 68)

The larvae of moths are just as destructive; each has its own food plant, e.g. the Privet Hawk, common in the suburbs, feeds on privet, the Puss Moth on willow, the Buff Tip on lime and elm, the Yellow Underwing on heather or bilberry, and the Vapourer on almost every tree, as the visitors to London parks can testify.

Should any question arise as to the difference between moths and butterflies, there is very little, but it is useful to recall that while butterflies are sun-loving insects, and come out by day, moths are evening creatures. When butterflies are at rest, their wings are placed upright over their backs, while moths arrange theirs in triangular form on their backs; the antennae of most butterflies are clubbed, those of moths are mostly feathered; also, in moths, the "waist" is hardly perceptible.

Observation of Moths and Silkworms

Perhaps, for observation of the development of moths, one can hardly do better than take the popular silkworm. This is not a British moth, but was brought from China in A.D. 552 by some monks, who, at peril of their lives, secreted some of the forbidden eggs in their hollow staves.

In spring the eggs should be put in a warm place, where they will hatch out small black caterpillars ¼ inch long, and only assume the characteristic grey skin and white wrinkled head when, on the eighth day, they go through their first moult. During development there are three other moults, each at intervals of five days. Their natural food is the mulberry, but they can be fed on lettuce; in the latter case the silk will be pale yellow, instead of the rich gold which is the natural colour.

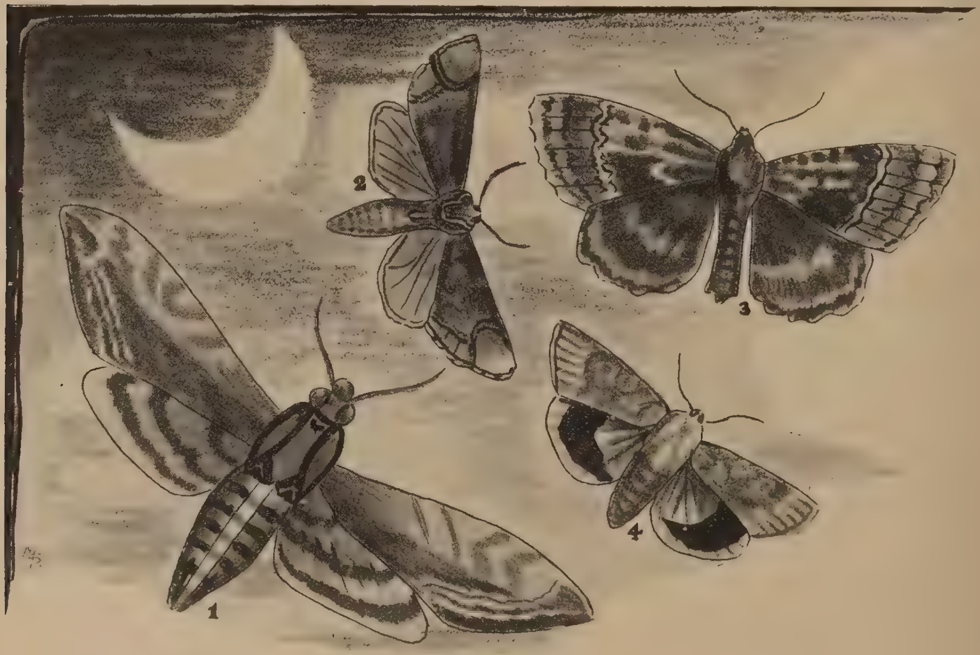

FIG. 68

Moths

(1) *Privet Hawk*, (2) *Buff Tip*, (3) *Old Lady*, (4) *Yellow Underwing*

In the silkworm, the various parts of a caterpillar can be clearly seen; e.g. the twelve single eyes, the pair of "feelers," the clasper legs similar to those in the Cabbage White, the breathing holes; while underneath, marked by a different colour, are faintly shown the long silk glands, from which liquid silk flows through two small holes below the jaw.

Silkworm Spins a Cocoon

In about two days after the last moult, the silkworm leaves off eating, and seeks a place in which to pupate; it spins irregular threads to support the cocoon of loose floss silk, and the inside is smeared with gum. The chrysalis stage lasts for about a fortnight, at the end of which the moth ejects a liquid from its mouth to dissolve part of the gummy layer, pushes aside the threads, and crawls out. Before this happens, the silk must be wound and the cocoon kept warm.

The moth itself is a grey buff, feeble creature which has almost lost the power of flight, and having mated, it lays its eggs and dies.

Records of Butterflies and Moths

In connection with work on butterflies and moths, children would enjoy keeping a record, as in Fig. 70.

Every school should possess some simple book on Butterflies and Moths, to which teachers and children could refer for the identification of new "discoveries."

The Common House Fly

Another common insect is the fly, which bears on its thorax only the front pair of wings, while for the hind is substituted a pair of balancers. It can crawl anywhere, even up glass, because on each foot are two pads covered with hairs that exude a sticky fluid. Its proboscis is furnished with two lip pads that give out saliva to dissolve particles, so that liquid food can be sucked up.

The eggs are laid on any damp food lying about, and hatch out into white maggots which feed for seven days, and then pupate. Of all insects, the metamorphosis of the fly family is the most marvellous, for the whole larval body dissolves inside the case into a sort of jelly, and from this the body of the fly is gradually built up.

In autumn most flies die, but some hibernate in dark corners. The large blow-fly (Fig. 69), or bluebottle, lays its eggs in meat, and many, like the bot, actually lay theirs in living animals. Flies constitute the great plague of cattle and horses during the summer months.

Because of their large numbers they are a menace to life, through contamination of food; children should be urged towards scrupulous cleanliness in personal habits and in houses. No food particles should be left about, and no food should be uncovered. Elder children should be taught that the killing of flies and their larvae is a social service in which all may help; and again, the importance of birds as fly-catchers *par excellence* should be emphasized.

The Spider

Another creature whose services as a fly-catcher are rarely recognized, and seldom appreciated, is the spider. It is not an insect, having eight instead of six legs, no wings, and simple eyes; also it breathes differently. But we have such strong thought associations, that it is convenient to speak of it here.

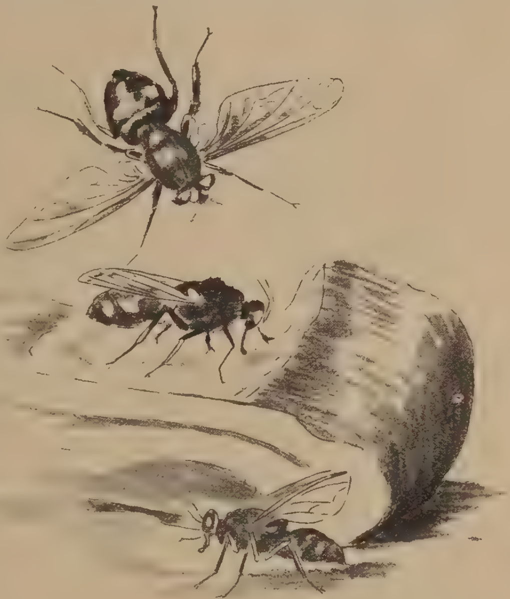

FIG. 69

Blowflies on Bacon (Enlarged)

We have many spiders similar in structure, but with differences of size and habits. Thus, in our houses, one spider spins sheets of web in an unswept corner; another, the tiny

Name	When seen	When Caterpillar found	Food Plant	Pupa
Peacock . .	15th April	3rd June	Nettle	Greeny, flecked with gold. Hangs from under stick
Cabbage White .	2nd May	9th May	Cabbage	On paling, bluey white, silk thread round middle

FIG. 70

gossamer, gives out long threads which act as a balloon, enabling it to sail through the air catching midges; another lives in a silken canopy under water; still another, the wolf, makes no snare, but hunts her prey, depending on sharp eyes, and swift-moving legs. But perhaps the best known is the garden spider (Fig. 71), which makes her beautiful wheel-like webs chiefly in autumn. She is so common, that almost any child with access to garden, or waste land, can find and recognize her by the white cross on the back of the abdomen.

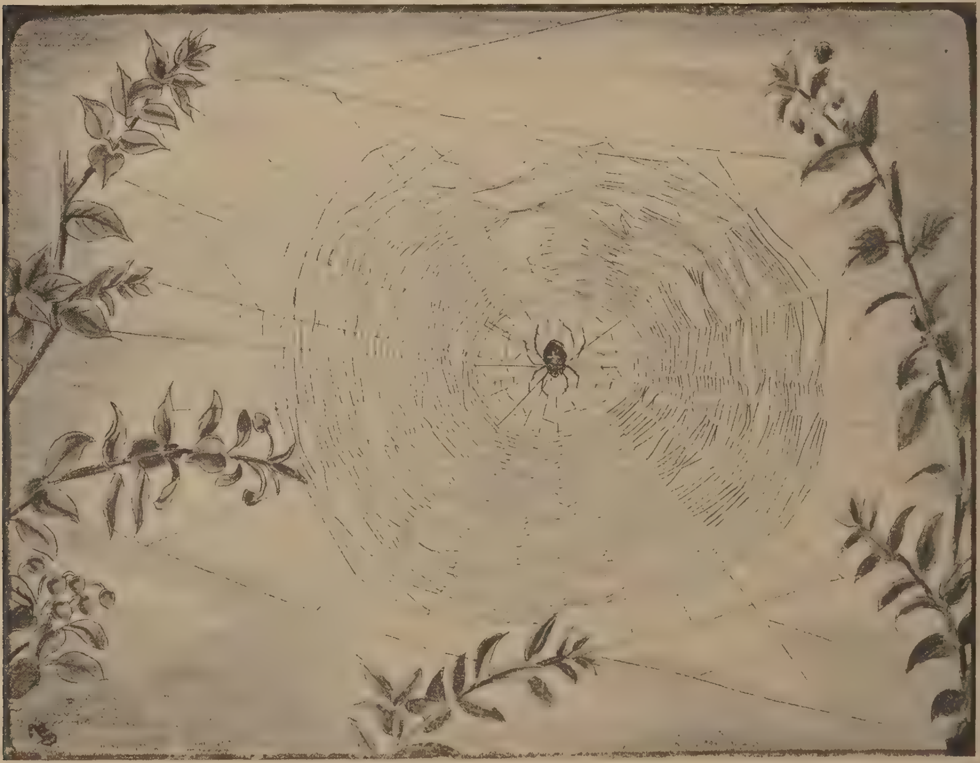

FIG. 71

Web of Garden Spider seen in Autumn

The Garden Spider (*Fig.* 72)

Near the tip of the underside are the three pairs of spinnerets, two large and one small, almost hidden beneath the others. These are pierced with holes, a few large ones called "spigots," and many smaller ones called "spools."

From the spigots come the two or four long threads that make the silken web, while the spools give out the fine threads used to wrap round daddy-long-legs, etc., when caught in the web.

The mother spider makes the snare by first constructing a rough framework with as many spokes radiating to it as she deems necessary to support the web; then she crosses these with a spiral thread, sticky in parts. When the whole is finished, she retires under a leaf with a long thread as a telephone between her and the web.

In this way she learns if any insect has been caught, and rushes out to quiet it by means of her poison fangs.

The Baby Spiders

The eggs are laid in a silken cocoon, tucked in between a bit of loose bark and the stem, and though some hatch in autumn, most cocoons remain till spring, when the exceedingly unfinished little spiders come out, and cling together in a ball under a leaf or some shelter. They moult nine times before the full size is reached.

The males are smaller than the females, and they comparatively rarely spin webs, preferring to find wives who will do this work for them, and catch the flies and other insects that constitute their food.

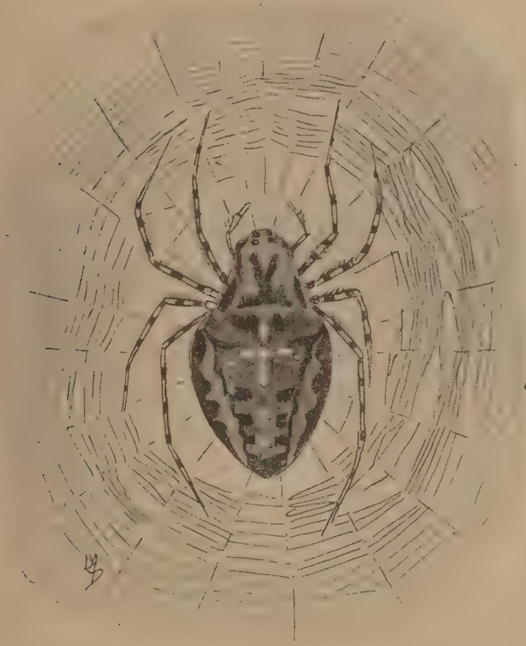

FIG. 72

Garden Spider (Enlarged)

The Story of the Bee

We must now pass on to those supreme wonders of the insect world, the bees, wasps, and ants, creatures who have learned to organize their lives so that they can live successfully in large communities. Here is the story of the bee.

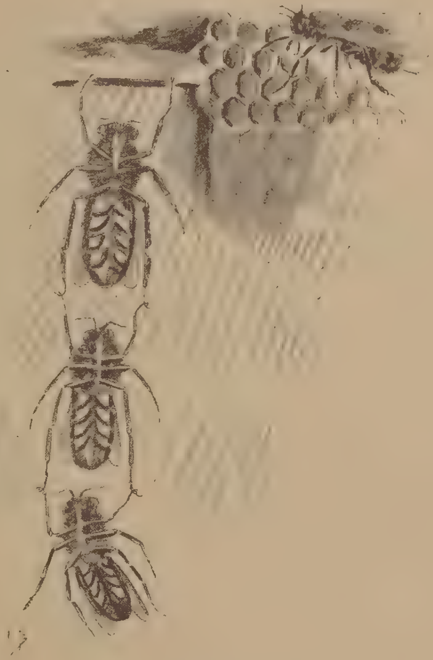

FIG. 73

Bees Making Wax

Early in May an unusual noise in the hive tells of the impending swarming of some of the bees, and about midday, when the sun is shining, out comes the queen, followed by thousands of her subjects. She makes for the branch of some tree, and there they crowd, each bee hanging to its neighbour's legs, until, with a smart blow on the branch, the beekeeper dislodges the swarm, which falls into a skep he holds below, and conveys them to an empty hive. Unless he does this, the swarm may make off to some hole, it may be a mile or more away, from which they cannot be captured.

Life Inside the Hive

Once in the hive, no time is lost, and while the queen rests and prepares for the great business of populating the hive, the bees set to work arranging the new home to their liking. Some go off to collect sticky propolis or resin from the buds of trees, with which to stop up any cracks, and some young bees climb to the top, while others hang on to their hind legs and others to theirs, until a curtain of young worker bees is formed. Just before swarming these had eaten generously of honey, which is to assist the secretion of wax.

Hour after hour they hang in the warm dark hive, until, perhaps 36 hours later, plates of wax begin to ooze out from beneath four rings of the abdomen. Then each bee quietly detaches herself, nips off the wax plates, chews them to make them pliable, and deposits the little lump at the top of the hive, ready for the cell builders (Fig. 73). It then flies off for a meal of nectar before beginning another arduous wax-making period.

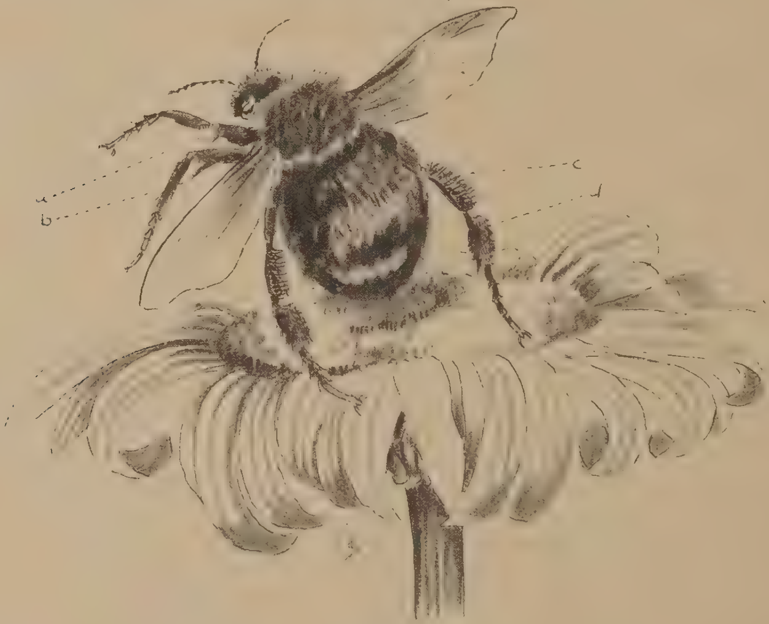

FIG. 74

Bumble Bee, Enlarged to show "Implements" on Legs

(*a*) *Comb*, (*b*) *Prong for getting pollen out of basket*, (*c*) *Pollen basket*, (*d*) *Brush*

Meanwhile, a set of cell-builders rough hew the wax into hexagonal cells, and having done this, pass on while finishers pare down the walls to the minimum thickness, polish them, and leave them perfected.

The Queen Bee and the Nurses

The queen, having rested, and waited for this moment, proceeds with her attendants to the empty brood cells, inspects one, comes out, turns round, inserts her abdomen and deposits an egg which is fastened to the floor by a sticky drop, and passes on to repeat the process—perhaps 3,000 times a day. Every now and then she is caressed and fed by her attendants.

The egg cells are now taken over by an army of nurse bees, who are all young; and when, in about three days, some small white grubs hatch from the eggs, the nurses feed them with pap which they can secrete only when they are young.

Later, when the babes are old enough, they promote them to a nourishing diet of pollen dust and honey, made into a soft paste. Of this they put a good supply into the cell of each grub, and finally, after five days, when the little creature has eaten it and grown so quickly that it has had to change its coat several times, the nurses cover up the cell with a porous cap, and leave the grub to pupate. This it does in two days after being covered in. It takes over a week longer for the developed bee to emerge from its cell, when it is welcomed, given a good meal, and after a short time set to work as a nurse.

The Workers

When enough new nurses have been secured, the older ones, no longer able to secrete pap, fly off and begin the agreeable work outside the hive of collecting nectar and pollen. Every worker bee is equipped for this task by a tube sucking-mouth for drawing up nectar, while for bringing home pollen there is a "basket," or little depression beset with stiff hairs, on each hind leg, and a prong on each middle leg to get out the pollen and empty it in the cells on the return home.

These can be seen well in the picture of the bumble bee (Fig. 74), whose collecting equipment is similar to that of the hive bee. From early morning till late evening, this work of collecting goes on—and all for the good of the community. Does a worker returning with a full crop meet a tired nurse or wax maker, antennae are crossed, and doubtless the need made known, for the collector regurgitates honey and gives it to the other. But if it does not meet anyone who needs a meal, it goes on to the food store part of the hive and empties the honey into an open cell, continuing till it is filled. The honey is left for two or three days to thicken; and before being potted down with a waxen cover, a tiny drop of formic acid is squeezed in as a preservative.

The Drone Bees

Now to the nursery part of the hive (Fig. 75).

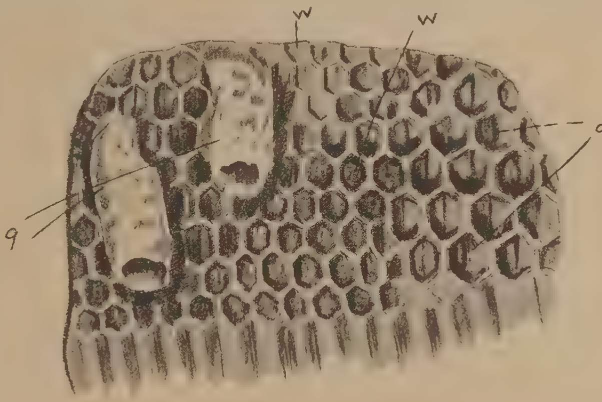

FIG. 75

Part of Brood Comb, showing Three Kinds of Cells

(w) Workers, (d) Drones, (q) Queen

After several days, when many thousands of cells have been supplied with eggs, the nurse bees alter the shape of a few brood cells, making them a little larger, and into these the queen, after some persuasion, inserts eggs which will eventually hatch out as male or drone bees.

These drones will lead a four months' life of idleness, drowsing in corners of the hive, taking meals, going for a short fly and sleep in the open air when the sun shines. You may come across these gentlemen in Canterbury Bells, foxgloves, and other flowers, and surely no more exquisite place for siesta could be devised. Drones do not work, but they are tolerated, and even kindly treated, by the hard-worked inmates of the hive.

The Young Princess

Still more worker-cells to fill. Then one day the nurses tear down partitions in worker cells, and fashion a chamber for a royal princess, into which the queen places an egg. Only a few of these are made, each perhaps after a day's interval. The precious little grubs are fed on pap, and then given royal food, a specially rich jelly; and when finally the cells are sealed up, the nurses watch anxiously, because when these bees emerge they will be possible queens.

When the first princess comes forth, she tries to get out, but the nurses prevent her. She drums with her wings and makes a violent humming; the old queen hurries along, for she cannot tolerate a rival, and she tries to tear down the covering and sting the princess to death. The nurses prevent this, and in a furious rage the old queen storms about, evidently protesting, while her hitherto obsequious subjects hustle her towards the entrance . . . *she will not stay ! . . . no ! . . . she will leave the hated intruder ! . . . those of her subjects who like to come with her may do so ! . . .* Little work is done, and for some hours there is upheaval. Finally, doubtless to the relief of many, she flies out, followed by thousands, and a new swarm has gone forth.

The Princess Comes Out

Now the nurses no longer bar the princess's way, but help her out. She hears the sound of her sisters, and tries to get at them, but she is prevented; and perhaps she, too, goes off, taking many subjects with her. Another princess emerges, and if there are only enough workers to carry on, the nurses do not now prevent her from getting to the remaining princesses and stinging them to death, till she reigns alone.

The Queen's Wedding

Now she goes to the door of the hive and sallies forth into the sunshine—alone—up and up she soars—alone ? From out the hive pour the drones—is not this their long-awaited contest ? The prize of the princess for one only. Up and up, beyond the birds, to a dizzy height, many fall back—still up, till finally the strongest wins the princess, and together they take their marriage flight (Fig. 76), till the drone falls dead.

Then back to earth comes the young queen, ready and able now to lay eggs for three years, and perhaps only once, or twice, again will she leave the hive at swarming time.

The unsuccessful suitors returning to the hive are no longer treated so kindly; they have not very long to live, and before winter they are killed by the workers for economic reasons.

Winter in the Hive

During the cold time, bees remain torpid, huddled together, passing from one to another sips of stored honey from those nearest the combs, striving to keep warm until the return of sunny days in spring calls them out to crocuses and snowdrops for a meal, and for an invigorating sun-bath. The bad days are over.

Other Bees

Other bees of the garden and field are the familiar humble, the queen of which makes the home all alone, often in a disused mouse's nest. She manufactures honey and pollen paste, lays eggs in small pieces of it, fills little wax jars with honey, and does all the work of the future community till the first batch of workers is ready. Then she hands over management to them, and becomes merely the queen, or mother, of the community. Then there is also the leaf-cutting bee, which makes its cells of neatly cut pieces of rose leaf, moulded into thimbles and fitted into hollow pieces of wood; mason bees, and many others whose stories would fill a book.

The Wasp

Wasps have a somewhat similar communal history. The queen wasp alone lives hidden under ivy, or in some crevice during winter, coming out in spring to scrape wood fibres, make paper, and fashion a wonderful nest in some hole in the ground. She attaches this to some root, makes the entrance at the lower end, and leaves a space all round (Fig. 77).

Here for a whole month she toils alone as cell builder, egg layer, nurse, food provider, until, as in the case of the humble bee, the first batch of workers relieves her of all duties but that of egg laying. They gradually enlarge the nest till it may be a sphere of 15 in. or 16 in. diameter, with several brood combs. The method of enlarging is by biting off the inner layers of "paper," chewing them, and putting them on the outside, while the cavity of the hole is also enlarged by taking particles of earth to drop outside the entrance—a work entailing a vast amount of labour.

Though wasps spoil much fruit, they are also animal feeders, and rid us of many caterpillars, flies, and earwigs. At the end of the season they cease to feed, and either become torpid and die, or wander out of the hive to be killed by cold; only the queen survives.

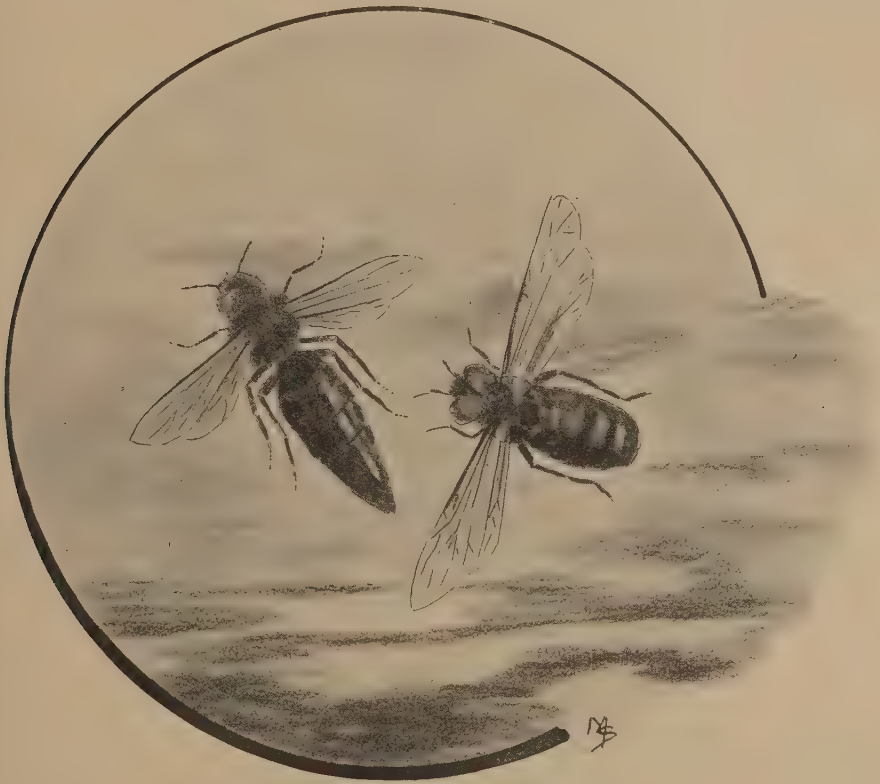

FIG. 76

The Queen's Marriage Flight (*Enlarged*)

The Ant

As Man is the head of the Vertebrate kingdom, so the ant is head of the Invertebrate. It builds cities, constructs roads, erects buildings, compared with which the sky scrapers of New York are mere dwarfs (picture an ant hill ten feet high, and so commodious that "the cubic contents of an ant building like this can hold a million times more inhabitants than the largest human habitation." *Ewers*). It hunts, keeps herds, sows seeds, harvests grain, bakes flour

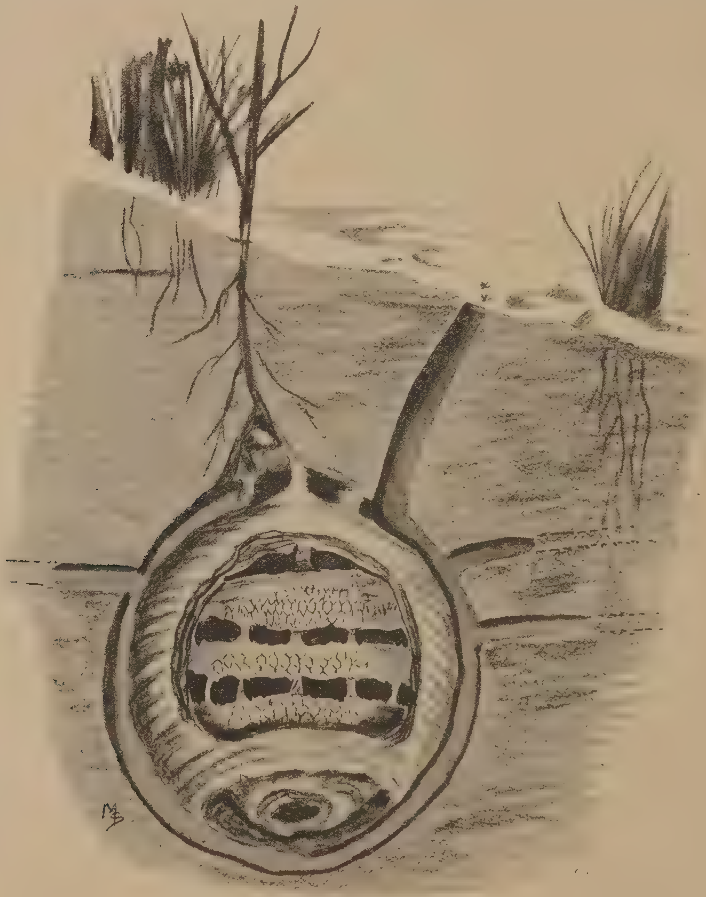

FIG. 77

Diagram to Illustrate Wasps' Nest

Shows nest attached to root in three places. Shaft leading to space round nest, side galleries. The nest is opened to show arrangement of brood combs

cakes in the sun, makes beds of miniature mushrooms, has marvellous armies that are the terror of tropical insect life. Ants, too, are excellent nurses, teachers, artisans ; in fact, there seem few primitive industries that are not undertaken by these insects in some part of the world, and by some of the many varieties such as meadow, hunting, agricultural, leaf-cutting, carpenter, etc. The story of each is a fascinating chapter in Natural History, and after the study of the appearance and ways of some of our common ants, the children may be told something of the doings of their foreign cousins.

The Garden Ant

The black garden ant makes its nest in the ground, often under some stone. This consists of a series of tunnels, less well constructed near the top, but becoming firmer as they go downwards. These tunnels open out into chambers with flat floors and vaulted roofs, in which are kept food stores, eggs, larvae, and cocoons.

Near the lower part will be found the queen mother, a large ant with a much swollen "abdomen," who in spring lives among her army of workers. There is a fine division of labour, and observers who have carefully marked individuals, have found that these keep, at any rate for some length of time, to their own work. Thus some are builders and excavators, using their mandibles as hands and implements; some are porters, carrying in loads of anything that may be useful to the community; others are nurses; others, the queen's attendants who wait upon her, caress, feed, and clean her, and also pick up the eggs as she lays them; and some are cattle herders.

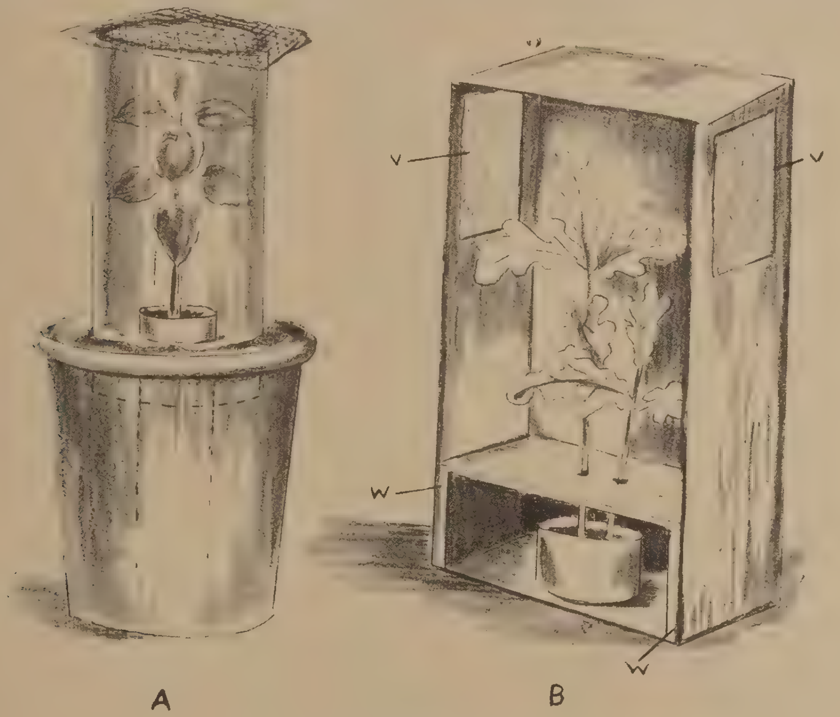

Fig. 78

Cases for Developing Larvae

Their Food

Now ants are fond of anything sweet, and they have found that the honey dew, given out by aphides, can be obtained easily. The aphis perhaps stands on a root or leaf, its sucking beak deep in the substance. Up comes an ant, and with its antennae gently begins to tickle it first on one flank, then on the other; the aphis raises the hind part of its body, lifts its legs, and gently squeezes out a drop of the plant juice that has been made sweet by passing through its body. This the ant laps up and induces the aphis to give out another drop, and still another. When, having for the moment "milked" it dry, it goes away and leaves the aphis to the pleasant task of sucking.

Underground, these ants collect their aphis herds, build earth "sheds" over them, look for their eggs, and take care of them all the winter. In spring, they put the hatched insects on to their favourite roots and shoots. When a root has been sucked dry, the ants' "cattle" are transferred to another, and from one plant to another, just as a herdsman would drive his cows to a new pasture when the old had become exhausted.

Winged Ants

In summer winged ants are found in the nest. These are males, and "princesses." Up to a given day they are not allowed outside, but one sunny morning the passages are opened, and out stream all the winged forms to meet others from neighbouring nests. This is the great annual marriage festival, and when it is over, the males do not return to the nest, though some of the young queens do so. Once inside, they strip off their wings and soon begin egg laying, for, unlike bees, there can be several queen ants, who are not jealous of each other.

Some young queens begin all alone the stupendous work of making a home, laying eggs, rearing and feeding young, till the first batch of workers relieves her and allows her once more to eat and to recuperate.

Observation of Ants

Suggest that children should look on any plant, such as rose or bean, infested with aphides; they are almost sure to find ants getting honey dew and stroking the aphides with their antennae, or protecting them against such enemies as lady birds.

Of the exquisite cleanliness of the home and person of the ant, of its "play," of its pets, its wonderful care of its helpless babes, of its unselfish giving up of food to its co-workers, there is no space to write. But teachers should use such interesting "classics" as Belt's *Naturalist in Nicaragua*, Lubbock's *Habits of Ants*, Dr. Hanns Ewer's *The Ant People*, etc.

SUGGESTIONS FOR CHILDREN'S WORK

1 Make development cages for caterpillars, as in Fig. 78.

(*a*) Is the simpler, being merely a lamp glass placed over a piece of some food plant stuck into a pot of damp earth. A muslin cover, or piece of wire gauze, prevents the escape of caterpillars, and admits air.

(*b*) If the teacher can cut out two ventilating windows (vv) from a wooden cigar box, the children can seccotine over each a piece of net, also on each side a wooden block (ww) to support a cardboard shelf pierced with holes.

They can find food plants and put sprigs through the holes into a little bowl of water to keep them fresh. Over the whole front, a glass door should be hinged by a piece of adhesive tape.

2. Make an "Insect Scrap Book," and invite children to draw and report on, or write an illustrated account of any insects they can watch in their gardens.

3. Make a large class frieze of common food plants, such as grasses, nettles, mulleins, nasturtiums, and let children cut out and colour different butterflies which they will arrange on their right plants for "egg laying."

4. Keep a class chart, recording dates at which the different insects under observation go through their metamorphosis.

POND LIFE

FROM about the middle of March, the frogs appear as forerunners of that long procession of pond inhabitants, which from now on to July will keep children on the alert looking for new appearances, and greeting well-known friends.

"*Brek-a-brek-brek-brek!*" call the males to their mates, as they creep up out of the mud where they have spent the winter. *Brek!* softly grunts the mate, and this spring chorus is continued with indefatigable persistency during early morning and late evening.

The couples betake themselves to the water's edge, and there the eggs, often numbering 2,000, are laid and fertilized. They are small at first, black in colour, with a white speck, and are surrounded by an albuminous film, which, absorbing water, causes the eggs to swell, rise, and form the familiar "frog spawn" (Fig. 79).

Frog Spawn

Few pond creatures or aquatic birds devour it, or it appears unpalatable, and is, besides, so slippery that it is difficult to bite off a small piece. Tiny green plants and minute pond creatures take up their abode in the chinks between the eggs, forming an association for mutual benefit. The carbon dioxide given off by the developing spawn is taken by the green plants, which liberate oxygen essential for the embryos. The minute creatures aid by their movements in breaking up the spawn and liberating the tadpoles, though probably some prey on the new life.

Each jelly sphere attracts the sun's rays and turns them into heat rays so necessary for baby things, and in a fortnight or three weeks the tadpoles emerge, very unfinished in appearance, for they have no eyes, mouth, limbs, or gills. Some instinct drives them to the nearest water weed, where they hang in rows, attached by a horse-shoe-shaped cement gland, situated just below the position of the future mouth. They need no food at first, for there is still within them a part of that which was stored in the egg.

The Growing Tadpole

After a time three pairs of external gills grow out at each side, a mouth is formed in the groove above the cement gland, and the little creature attacks its baby food—the green conferva that grows over water weeds and stones. It is soon vigorous enough to nibble at duck weed and any delicate vegetation.

A further stage is reached when the branchiae become covered, and the tadpole breathes much as a fish breathes, through gills. It becomes very active and swims vigorously by means of its tail; its body looks more transparent, and is speckled with yellow; its eyes become brighter; and through the skin can be seen the long coiled intestine.

The next important event is the development of the hind legs. The four legs really develop together, but the front ones take longer to break through the gill covers, and so do not appear for a time.

Soon after getting the hind legs, the tadpole frequently comes to the top of the water and takes in a bubble of air. If we could see inside, we should realize that a great change is taking place and that the tadpole is learning how to breathe through lungs which are gradually developing. It loses its hearty appetite, for plant food is beginning to be distasteful; the shape of its body alters and the abdomen gets relatively smaller. It is beginning to look more frog-like, especially as its eyes appear through the skin and the rounded mouth becomes wider. Now the tadpole searches for different food, and he turns to tiny water creatures, such as water fleas, worms, and, if nothing else offers, will even turn on his own kind, for meat food he must have or die.

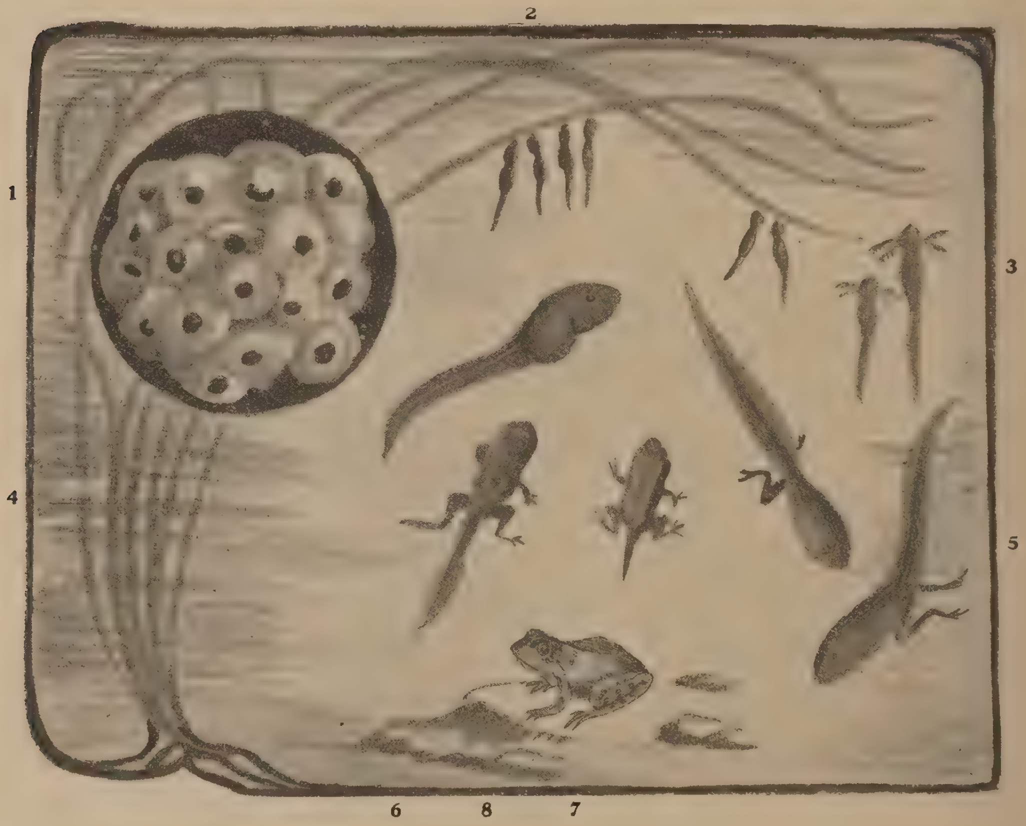

FIG. 79

The Development of the Frog

(1) *Spawn*, (2) *Just Hatched*, (3) *Showing Outer Gills*, (4) *Breathes by Inner Gills*
(5) *Hind Legs appear*, (6) *and* (7) *Gradual disappearance of Tail*, (8) *Frogling*

The Grown Frog

Day by day the tail shortens and the head grows larger; more time is spent at the top of the water. Any stone or plant above the surface is soon crowded with tadpoles rapidly nearing their final change. At length, three months after the deposition of eggs, the froglings, each about the size of a thumbnail, leave the water nursery and take to the fields; there to hunt for tiny flies, aphides, etc.

By the end of June the edges of ponds are alive with these youngsters, and many fall victims to hungry birds, ducks, and to the young grass snakes liberated from their eggs in time to come in for the feast of froglings.

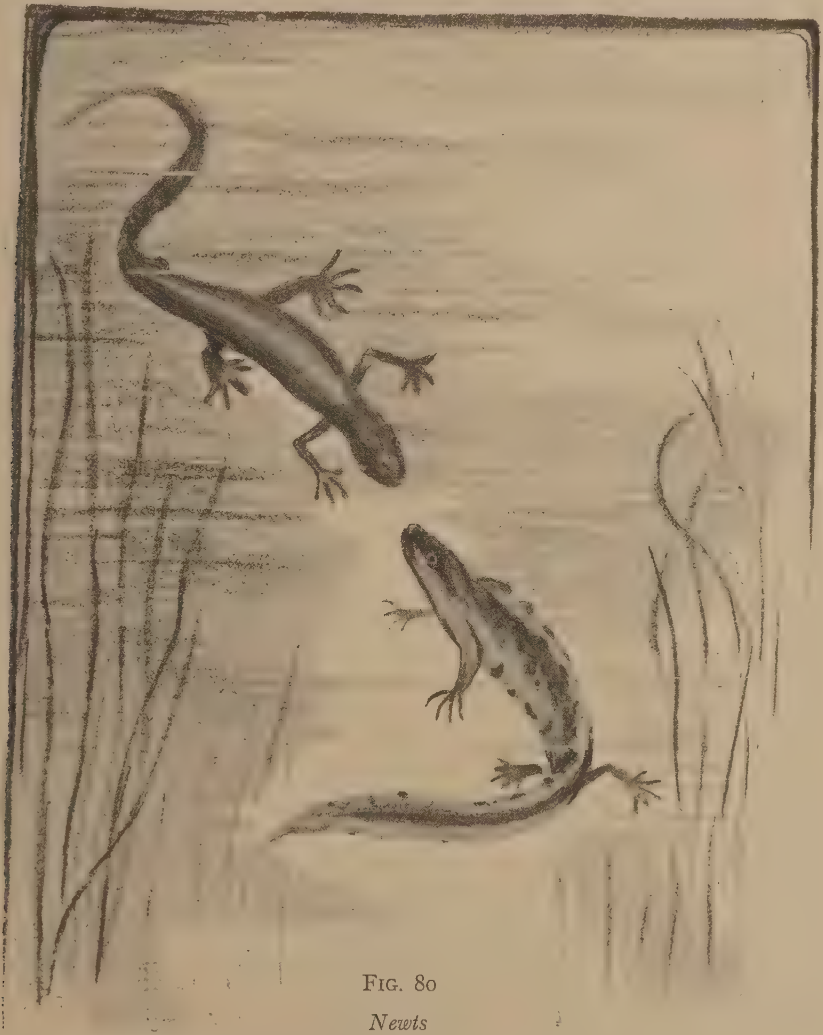

FIG. 80

Newts

The Newt (*Fig.* 80)

During April the newts, near relatives of the frogs, appear, and the great newt or triton with its dark notched frill down the back and gorgeous orange belly, spotted with black, is one of the prizes of the young collector intent on stocking an aquarium. The common newt is lighter olive, is less frilled, and is a good deal smaller. These creatures also come to the water in spring to lay their eggs, though not in such numbers as do frogs and toads.

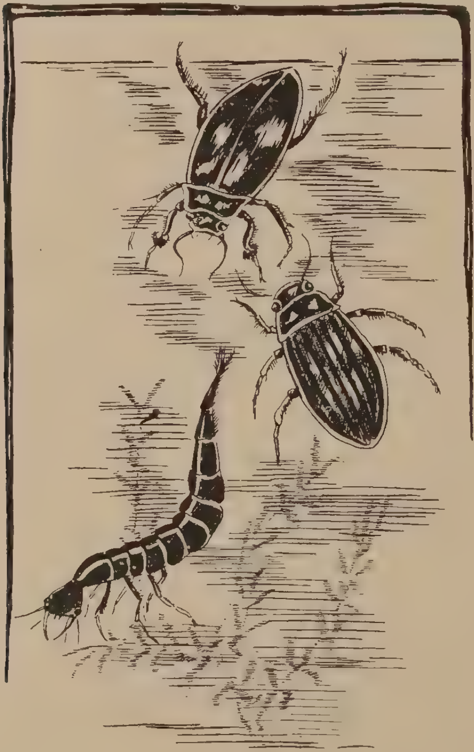

FIG. 81

Great Water Beetle

Male, Female, and Larva

Look for a leaf doubled across; if it is opened, probably one or more little jelly spheres, containing a white nucleus, will be seen; these are newts' eggs. They are laid singly, and are eagerly sought after by fish, hence the necessity for protecting them in some way. When they hatch out, there will come from them tadpoles, but much more delicate and more fish-like than those of the frog. They will go through similar stages of development, but their external gills will be very feathery as they stream over their backs, and the front legs will develop first. Baby newts, also, do not lose their tails.

Baby Newts

It may be well to state here that newts are slow-growing creatures. The common newt, only about four inches long, takes four years to become adult, and grows at the rate of an inch each year. Now it is only adult newts that take to the ponds in spring for breeding purposes, though young ones like to go in and *out* of water; hence, when young newts are caught and put into an aquarium, naturally they try to escape. They should be kept in a vivarium where there is a sod of grass, or some growing ferns, and a bowl of water; here they will be content.

Other Pond-Dwellers

To return to our pond. In April it becomes difficult to keep up with the ever-increasing population. Over the surface skim the water measurers, so light that their feet do not break through the surface film. Then bright silvery points catch the eye—whirligig beetles, so fascinating to watch, as they whirl round and round the pond, resting but a moment before continuing their giddy way. Try to catch one; how difficult it is, even with a wide net, for these little beetles are among the most expert divers in the pond. Try to keep one in an aquarium, and with its broad hind feet, fringed with stiff hairs, that when damp act like suckers, it will climb the smoothest surface, and failing this will raise its wings and fly off.

The Great Water Beetle (Fig. 81)

Now to the surface rises a rather large oval body, turns up its abdomen, slightly raises its wing covers, and rests, head tilted downwards, so that with its large eyes that are part on top and part underneath the head, it can keep a sharp outlook for possible victims below. This is the great water beetle, one of the most common and most powerful of aquatic insects. The colouring is a deep brown, and round the margin of the thorax and of the wing covers runs a conspicuous yellow line. The male and female differ a good deal, for while the wing covers in the male are almost smooth, those of the female have several deep grooves. Also on the front pair of the legs of the male is a circular patch which acts as a sucker. If this beetle is taken into the hand it may emit a milky fluid with a very unpleasant odour. Hence it is left severely alone.

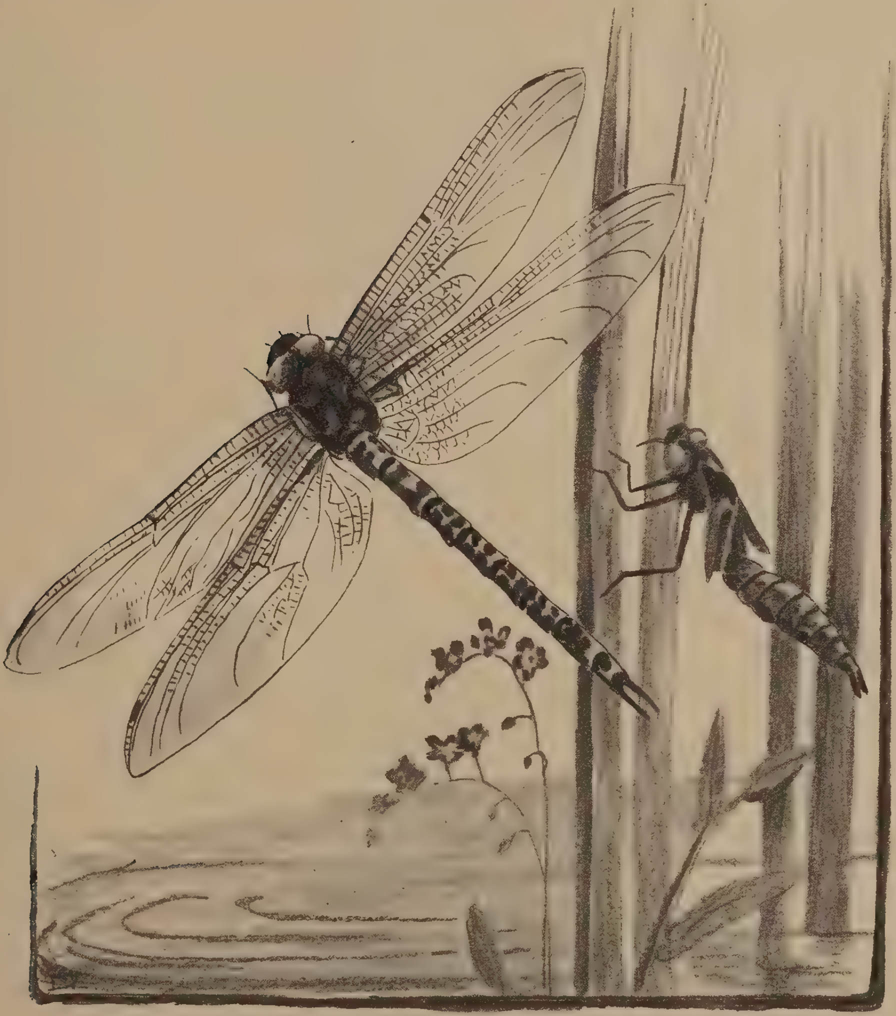

Fig. 82

Dragon-Fly, also shown Emerging from his Chrysalis

It has a hearty appetite and will eat anything, even larvae of its own kind, and molluscs, whose shells it can bite through with its powerful jaws. Its larva is the well known "Water Devil"; sluggish in its movements, it rests on the mud at the bottom of the pond or holds on to water weed; but should a tadpole or any creature come near, it seizes it with its powerful mandibles, which are in reality sucking tubes, and steadily drains its victim till only the mere husk remains. From time to time the larva must come to the surface to breathe through the two little appendages at the end of its body.

In about two months' time, it leaves the water and buries itself in the soil near by, in order to go through the pupal stage, which lasts about a fortnight, unless it is near winter, in which case it hibernates in the pupal condition till spring. Many other varieties of beetles will surely be found, but in each case the life-history will be similar.

The Dragon-Fly (*Fig.* 82)

The larva of the dragon-fly might just at first be confused with that of the great water beetle, though the two are not really alike. It is a powerful mud-coloured creature, with six long legs, and at first no sign of wings, though later, after some moults, these appear, becoming more developed with each moult. This creature is indefatigable in its pursuit of food, especially of tadpoles, water shrimps, small fish. Nothing living comes amiss, though, unlike the water devil, it disdains dead things. Although it moves slowly, it stalks its victims carefully, and when within a certain distance shoots out a terrible hooked under-lip which, up till now, has been folded beneath and over the face, and for this reason is called the "mask." When once this has seized the victim, there is no chance of its escape.

Sometimes, watching this larva in shallow water, we may see it suddenly shoot forward and may wonder how this is done. At the end of the body are three prominent flaps, which can open out or close up, and we can see the abdomen dilating and contracting as the valves open and close, while water is admitted and expelled. When the larva wishes to move rapidly, it suddenly sends out the water, and so shoots forward.

The entrance of water into the body tube is also connected with breathing.

The Transformation

After from ten to fourteen months, the nymph, as the larva is called when wings develop, creeps up some stick or rush, and the wonderful transformation into the coloured winged dragon-fly takes place—a never-to-be-forgotten sight. When the dragon-fly first creeps out of the pupal covering, it is small, its wings are crumpled, and can be easily bent. It rests for a time, then the skin dries and hardens, the wings straighten and expand, and the jewel-like creature darts away into the sunshine to begin its aerial life of pursuing insects, while the pupal covering is left behind still clinging to its support. This is so perfect that it is hard to believe the imprisoned inmate has escaped.

Water Boatman (*Fig.* 83)

But what is this greyish-brown oval creature rapidly coming to the surface ? It seems to be rowing itself along. This is one of the water bugs, well named the "boatman"; and looking closely, we can see three pairs of legs. The hind ones are so long that they can be used as oars; the smaller front pair catch hold of any plant when the water boatman needs to rest or look about. They row with their underside uppermost and look silvery in the water, for the body is covered with short hairs which entangle air when the creature thrusts out its abdomen from the surface of the water.

They are dangerous inhabitants of a pond, for they have a nasty habit of coming up on the under-side of their victims, into which they plunge their sharp strong beaks.

The Water Scorpion (*Fig.* 83)

There is another water bug closely allied to the boatman, but for this we shall probably have to dredge. Drag the net along the muddy bottom, and bring up some mud and weed. Look carefully at these; in all probability will be found a flat creature, known as the "water scorpion," the colour of mud, and looking just like a dead bit of leaf. It lies on the mud, or among some decaying vegetation, and hardly moves. Yet this is one of the most deadly foes of tadpoles and larvae of dragon-flies, may-flies, etc. The first pair of legs is held out like a bent elbow, and the last sharp joint fits back into a groove in the second, just as a knife blade fits into the clasp.

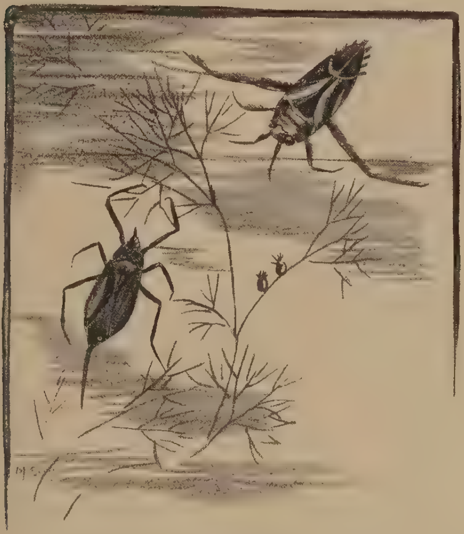

FIG. 83

Water Boatman and Water Scorpion
Eggs shown on Stem

As soon as some creature comes near the water scorpion, out flash the terrible legs and are clasped round the victim, which, struggle as it may, has not the slightest chance of escape. The two long hairs at the end of the body, when placed together, form a delicate tube, which can be protruded through the water film to take in air.

Patience Needed

A pond is never-ending in its possibilities of providing interesting observations, if only we will wait patiently. Too often children are allowed to plunge in nets or bottles, scrape the sides, stir up the bottoms before watching, and many a splendid opportunity of getting to know something of the real habits of water creatures is lost.

Here, in a rather sheltered bay, is a tangle of pond weed and starwort, where water spiders moor their white thimble-shaped lairs, and water snails, both common pond and trumpet, abound, while caddis larvae creep somewhat clumsily about, feeding on the plentiful vegetation.

Caddis-Fly and Larvae (Fig. 84)

There are several varieties of caddis-flies, whose larvae have the front part of their bodies and legs well protected by a horny covering, but whose abdomens, being soft and white, would attract many pond creatures on the prowl for food. Caddises have long learned how

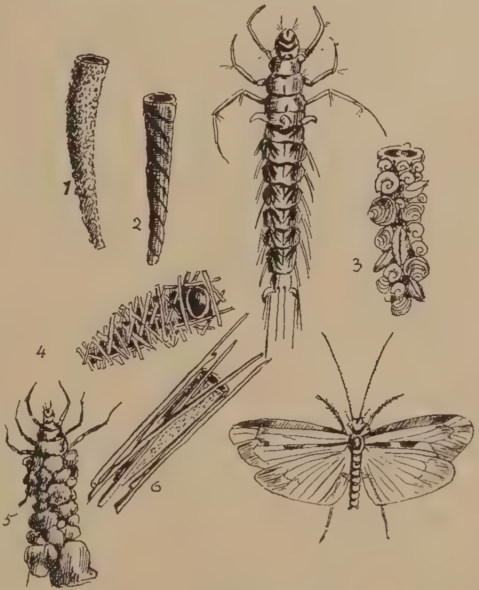

FIG. 84

Caddis Fly, Larva, and some Varieties of Cases

(1) *Sand,* (2) *Strips of Grass,* (3) *Shells,* (4) *Fine Grass Stems,* (5) *Stones, with larger ones for weights,* (6) *Sticks to make case buoyant*

to protect themselves by making cases of different materials, fastening them together with a liquid sticky silk that soon hardens. As each variety prefers a different sort of case, it is interesting to see how many can be found. Thus one, living in a stream with a sandy bottom, makes a perfect horn of grains of sand, another fashions a little horn of pieces of grass leaves, cut in strips and rolled spirally; one collects minute shells, with or without the living inhabitants; another cuts stems of grass into equal lengths and makes a case whose front is like a miniature Oxford frame; another selects sticks and looks like a tiny faggot; and still another, taking less trouble, cuts a piece of hollow stem and creeps inside.

Directly danger threatens, the larvae draw within their cases, and so manage to solve successfully the problem of how to live in a crowded water world. They are mainly peaceful vegetarians, and live for the greater part of a year as larvae. In early summer they close their cases with a silken mesh, pass into the pupal state, and after about a fortnight emerge, climb up the stem of a water plant, burst the covering, and fly away as small moth-like creatures, whose only business is to find mates, lay eggs, and then die. In its life above water the caddis has no power to eat; its mouth parts are too weak.

Water Shrimps and Gnats

If a crooked stick be put into the weed at the water's edge and pulled sharply out, a number of lively little crustaceans can nearly always be found; they are water shrimps, very similar to sand-hoppers, and act as useful scavengers, for they feed on decaying vegetation. They breed in enormous numbers, and are preyed upon by most of the carnivorous pond creatures.

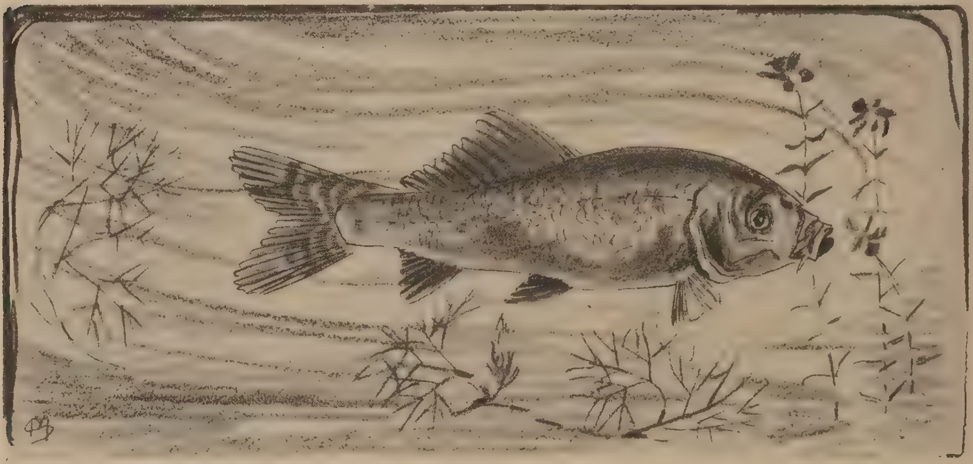

FIG. 85

Gold Fish

Towards evening especially, gnats congregate over the water, and as the female lays her eggs she gathers them with her hind legs into a wonderful little buoyant raft. Each egg is bullet-shaped and has a lid that opens to let out the larvae. These move about by rapidly twisting their bodies, but are often to be seen head downwards, hanging from the water film by means of five little valves, which can be opened flat from the end of the respiratory tube. After about a fortnight, the larvae become pupae and float head upright, breathing now by two tubes that project from the back of the thorax.

Pond Fish and Gold Fish

The fish most commonly found in ponds are the loach, a small long-bodied fish that likes to rest on the stony bottom, and has delicate tentacles on its head to feel for living prey; the miller's thumb, rarely seen because of its proclivity for hiding under stones; the minnow; perch; and in running water that most pugnacious, masterful little fighter, the stickleback, one of the few nest-building fishes; and the carp, a quiet inoffensive fellow feeding on young shoots, small worms and insects. All live in ponds. Its near relative, the gold fish or golden carp, was introduced into our country from China about the sixteenth century, and has become the most popular fish for the aquarium, besides having been acclimatized in many ponds.

Children should examine one of these to gain some knowledge of the ways in which fish move and breathe. (*See* Fig. 85.)

The Fins

It shows clearly the double-wedge shape of the body, which parts the water so easily as it swims. On either side, just behind the head, is a pair of fins, the pectoral, which correspond to arms in higher animals; and instead of legs, there is the pair of ventral fins under the body. These fins, however, do not help the fish much in swimming forwards, but they do help in steering and in keeping balance. Should anything happen to the pectoral fins, the carp would swim with its head downwards; while if the ventral fins were damaged, it would roll helplessly in the water.

Besides the paired fins, there are the dorsal and anal fins that act as cut-waters and help to maintain the upright position. The chief fin in connection with movement is the caudal, or tail, which the fish uses in a sculling manner. From the pectoral girdle, or shoulders, great muscles run to the tail, and by contracting and relaxing these on alternate sides the tail is moved. If the gold fish wants to swim to the right, he moves his tail to the left, together with his left arm fin, closing down the right. If he wants to go to the left, he does the reverse. When the fish is swimming rapidly he holds the paired fins close to the body, so as not to hinder progress.

Fishes' Scales

Down the middle of each side runs a line of scales not quite like the others; these have little holes, and from them oozes a slimy fluid, which keeps the body oiled, slippery, and warm, as needs be for a cold-blooded creature.

It breathes by taking in water at the mouth and passing it by means of slits in the throat to the gill chambers on either side of the head, in which lie the feathery red gills—red, because of the numbers of minute blood vessels that convey the blood to where it can take air out of the water. The impure water is then forced out of the scaly gill covers.

As it is impossible to take all children for direct observation to a pond, provision should be made in school for watching the habits of favourite friends, and of creating opportunities, such as afforded by the metamorphosis of many creatures, for developing that sense of awe, wonder, and reverence for life, which is so essential to understanding sympathy.

We shall therefore consider the preparation and stocking of a school aquarium.

THE SCHOOL AQUARIUM

IN order better to observe the habits of pond creatures, we must, when starting an aquarium, be prepared to make the conditions as true to Nature as possible. Nothing can be more full of horror to the Nature lover than the glass aquarium, with no sand or stones, no plants, placed in the full light of a window and supplied with ant " egg " food for the miserable inhabitants. Since an aquarium is within the possibilities of many homes, teachers should make it their business to see that the children thoroughly understand how to make and keep one.

The Right Conditions

First, let us consider what are the conditions of life in pond or stream. There is a muddy or sandy bed; stones or irregularities of bank give opportunities for seclusion; abundant vegetation provides food for some of the creatures, and aerates the water for all; light comes from the top. Hence the essentials of a good aquarium are: a sand or mud bottom, hiding places, growing plants, and shade from the great light.

The best aquarium I have ever known was made by a small boy in a wooden tub in a backyard. Plant and animal life was perfectly balanced, and the latter had no trouble with light admitted through the sides.

If we want to study the development or habits of many creatures, a series of smaller aquaria is better than one large one, for if creatures captured from a pond are put into a small space without selection, there is soon terrible warfare; all are damaged, and restocking has to be begun.

Suitable Receptacles (Fig. 86)

Having selected the receptacles (earthenware bowls should not be overlooked, they are better than glass for many creatures), the first thing is to prepare the bottom. Sand from a stream is excellent, but if it has to be bought it must be *thoroughly* washed. Next, plants must be chosen and set firmly into the sand. In a good aquarium there will be several varieties, partly to give a choice of food and partly because of the greater beauty and consequent interest. Among the best plants are—

Water Starwort (*callitriche verna*), with star-shaped cluster of leaves at the apex of the shoots and a tiny unisexual flower.

Vallisneria Spiralis, not a native of our ponds, but can be procured cheaply from any naturalist. It is, perhaps, the most valuable aquarium plant, for its long grass-like leaves are wonderful oxygen factories.

Water Crowfoot (*ranunculus aquatilis*), well known for its two kinds of leaves and exquisite white and gold flowers. It is a great favourite with gold fish, and a good oxygen generator.

American Pond weed (*anacharis alsinastrum*), a rapid grower, and most useful plant, especially where water spiders are kept. A valuable food plant for fish.

Duckweed (*lemna trisulca*) helps keep water shady and cool, a quick grower, and may have to be kept in check.

Most of the pond weeds (*potamogeton*) are only suitable for tubs and larger aquaria.

Putting in the Water

Having placed the plants securely in the bottom, stones should be put over the sand and a few large ones built up to form lurking places and to give shade from too great light.

Now water must be gently run in, so as not to stir up the bottom and disturb the plants. To do this, place a pail of water on a level higher than the top of the aquarium and form a syphon with a piece of rubber tubing. Put one end of the tube to near the bottom of the pail, and suck the other to start the flow of water, and place in the aquarium. Should the receptacle be deep, as in a bell jar, only half fill it, so that air may come in contact with a relatively greater surface. (See Fig. 87.)

No animals should be introduced until the plants have become settled in their new home and have begun to work. They show this by bubbles of gas that appear like minute silver beads on the leaves. It will take a fortnight at least, though longer time is desirable, before a *few* creatures can be introduced, e.g. gold fish, caddises, water snails, water shrimps.

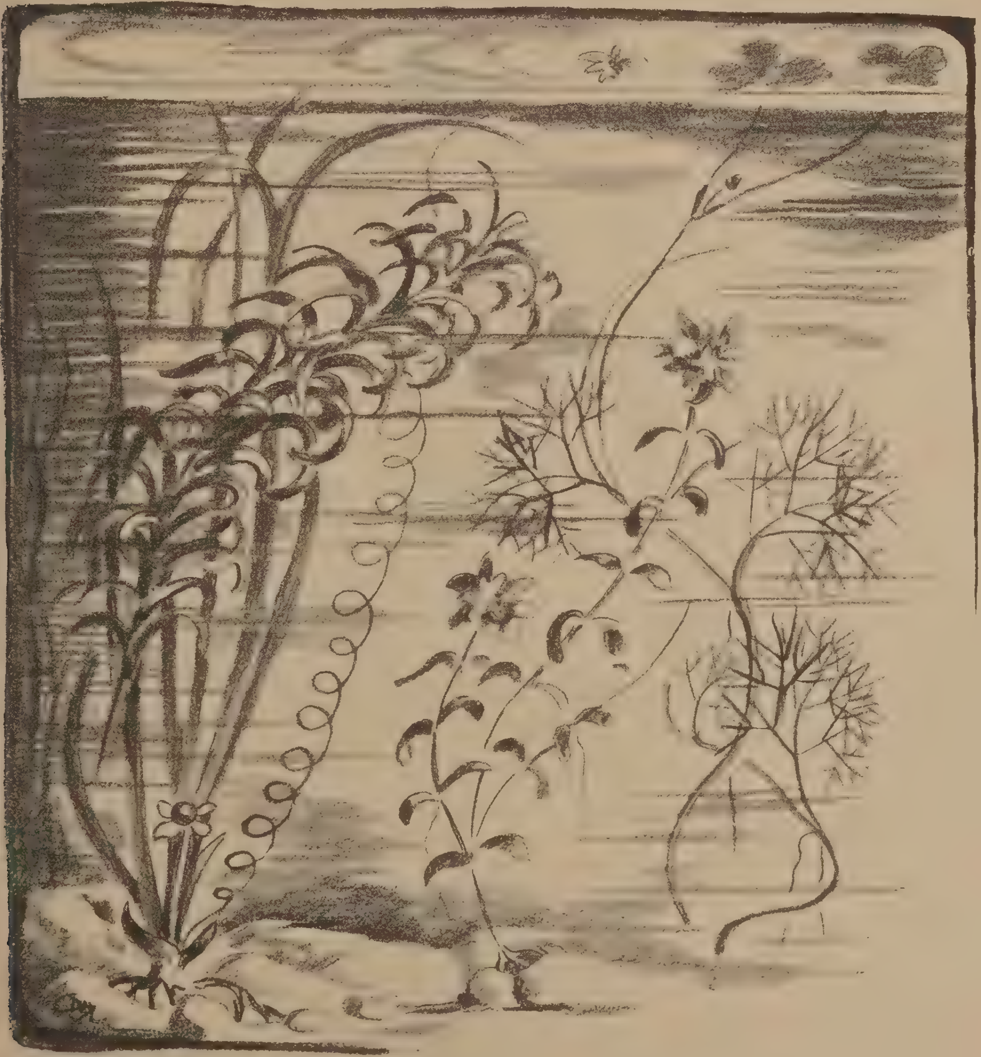

FIG. 86

Aquarium Plants

(1) *Vallisneria spiralis*, (2) *American Pond Weed*, (3) *Water Starwort*, (4) *Water Ranunculus*

Do Not Introduce Carnivorous Creatures

Carnivorous creatures, such as larvae of beetle, dragon-fly, some caddises, water boatman, water scorpion, should not be put in with the plant feeders, and most of these prefer a mud bottom rather than sand. Tadpoles are best by themselves, as their requirements change from time to time.

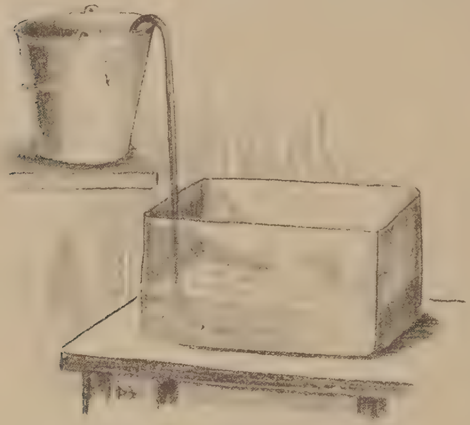

FIG. 87

How to Fill an Aquarium by Syphon

When detailed observation of any creature is to be made, it should be placed in a jar with a few pieces of the valuable anacharis, which, not needing planting, will grow and aerate the water.

Caddis, dragon-fly, and beetle larvae, water scorpions, water boatman, and newts, when taken from the pond, are best brought home in a tin box containing weed, as they are less liable to be damaged than when crowded into a bottle full of water.

How to Bring Home the Creatures

Water shrimps should be procured and placed in a receptacle by themselves; they multiply rapidly and can be used as valuable food for many creatures.

If possible, the aquarium should be lodged in a north window, and should always be protected from bright sunlight. A screen of green glazed lining, placed around three sides, will give welcome shade to the inmates during the brightest part of the day.

Providing the aquarium is well started and the plants grow freely, there is no need to aerate the water; it is only when the right balance of plant and animal life is not maintained that devices for aerating must be used. One is to syringe air in, another is the use of two syphons, one to drain out some of the water and the other to admit a fresh supply; but these necessitate a good deal of trouble and are unnecessary when the aquarium is properly balanced. Any deficiency of oxygen will be shown by the fish coming to the top to breathe, and by the increase of respiratory movements.

NATURE RAMBLES—THEIR VALUE

ONE of the most important means of helping children to love the world of Nature in its varying phases is a ramble with a sympathetic adult anxious to share some of the treasures she has learnt to value.

If possible, an expedition should be made every week for the purpose of gaining an intimate knowledge of a small area, with its plant and animal inhabitants; it should not be undertaken for the sake of collecting specimens. We want children to be able to enter into some of the problems and difficulties that each living thing has to face; and, as a rule, except in the case of creatures for an aquarium or vivarium, this is not furthered by collection. We want to help them to appreciate such things as the earliest or purely local flowers, without desiring to pick them—to enjoy them, and leave them for the enjoyment of others.

Preliminary Work

In country schools, the surrounding land will be familiar to most children, who will know names of woods, fields, lanes, etc.; hence work of a more intimate and informal character can be carried on than when children are brought from a distance for occasional rambles. In such cases they should be helped, by preliminary talks and blackboard plans, to form some acquaintance with the district to be explored.

But whether more or less formal, each ramble must be carefully planned, partly because, if children are merely turned loose to " see what they can find," they will discover little, owing to multiplicity of objects that distract attention; and partly because, in order to " see," they must know for what to look. The purpose therefore must be clearly understood by all.

Yet this purpose must not be so fenced in that joy in the unexpected may be frustrated, for this is one of the great charms of Nature. We want to keep the children alert and eager; something rare or unusual may occur, and because of this, and the feeling of curiosity or wonder evoked, such may become the most interesting feature of the walk.

A class set out one day to study fruits, but the discovery of a blackbird that was nearly white was so thrilling that the rest of the time was spent in stalking the bird, and when that was not possible, in eager questions that led to sitting down on a bank to hear of birds and beasts that were white always, and white sometimes, and " chance " white. The obvious uses of such colouring in suitable, and disadvantages in unsuitable, environments was also discussed.

The teacher realized that fruits were hopeless for that day, and gave herself to furthering enjoyment in the unexpected. Although many of these children are now nearly grown up, the memory of that walk is with them still.

Purpose of the Ramble

The purposes of these walks should be as varied as possible, to appeal to individual preferences as well as to open out all aspects of Nature. Sometimes there may be tracking of animals' footmarks; or to discover what creatures live in this hedge or common; to hide up in bracken for the purpose of watching a squirrel or rabbit family, feeding or at play; to learn the action of a stream in wearing away its banks, etc.; to discover evidences of the work of wind; to see gravel lifted by a sharp frost; to find different kinds of webs made by spiders; to identify trees whose buds have been studied.

During the walks, events and happenings may occur which necessitate further visits at short intervals, and suggestions may be given for work out of school, such as the collection of grasses and Nature material for handwork, the search for different wild flowers of the month, to add to the Nature Table. Such activities may well develop hobbies that prevent the formation of habits of idling and loafing for want of definite and interesting things to do.

Impulses of Curiosity and Wonder

It is in these early years of childhood, by appealing to the impulses of curiosity and wonder; the love of searching and discovery; the joy of using sharp eyes and active feet to find out some of the ways of wild creatures, that we can lay the foundation of an intelligent interest in Nature which will remain through life.

Adults who have not had this developed see little in the country, especially in winter; but those who have, walk with eager eyes scanning hedge, bank, and ditch, or lifting them to hill and field for wider vision and to read familiar signs of wind, weather, time, and season.

Nothing can be of greater value in the study of Nature than these walks, which open the eye to see and the heart to love, for it is these things that give free pass into the great company of Nature lovers the world over. Things seen and learnt in childhood are never forgotten. In childhood years, every country walk is an adventure and every discovery a thrilling event.

We should not forget that Nature has more than a purely intellectual interest, and that it is at times much more satisfying to watch, without talking, the beauties of a "mackerel" sky, a rainbow, a sunset, a wide view; to listen in silence to the wind in the pines, to a storm, to the song of a lark, and to hush one's voice in the aisles of some forest cathedral.

Opportunities for Town Children

In town schools, children come badly off for Nature walks; still, for many, there are the parks, and although conditions are more artificial, they can at least afford excellent tree study, and though cultivated flowers must mostly be substituted for wild, buttercups and daisies are still common in the grassy parts; while for the study of birds there are many opportunities.

Small groups of children can be shown the best places to search for spiders and some chrysalids—under projections, ledges, and stone copings. A walk to a market can be utilized to distinguish different fish and "shell fish," and to learn something of their appearance; a nutting expedition can be arranged, and for a few pence a selection of nuts acquired for more detailed study. The flower market, stall, or shop may help to give some impression of the season's wealth of flowers, and these walks should be helped out later by pictures of environments. Other suggestions have been noted in different sections—especially in those on bird, insect, and flower study.

It must be confessed that, though these excursions are very useful in eking out the scanty Nature material obtainable in towns, they are a poor substitute for those which can be taken in the country or even in the suburbs.

(*Nature Talks are continued in Volume IV*)